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It's the best selling weekly

Vol 3 No 48

Coleco pulls out

COLECO — manufacturers of the Adam computer and the Colecovision video games machine — has pulled out of the UK market.

The news comes after continuing rumours that the company had abandoned its sales efforts for the Colecovision earlier this month (see *Poplular Computing Weekly*, November 15)

The machines are manufactured by CBS in the US, and marketed in that country by Ideal Toys "CBS's involvement with Colecovision is not going to continue," said Philip Gibbs director of marketing for electronics. "We are aware that a lot of consumers who already own a Colecovision will need software support, and within the next week we will be appointing a sales agency to handle that side of things.

"The product is still in the shops, being handled by one distributor Hyde Park Clothing Company."

Hyde Park Clothing Company is reported to have taken delivery of 160 00 games cartridges and 40 000 consoles sold as remandered stock The company's manager, Mr Spiro, said, "We have bought the stock, but I will not divulge how many units. The figure of

After Midnight — Doomdark

THE SEqUEL to *Lords of Midnight*, *Doomdark's Revenge*, is now in the shops

Morkin has been kidnapped by Shareth, Doomdark's daughter, and Luxor, Rorthron and Tarithel the Fey must join forces to rescue him.

Available so far only for the Spectrum *Doomdark's Revenge* costs £9 95.

Sinclair confirms portable

SINCLAIR has now confirmed that it is working on a new portable micro to be launched in 1985, (see *Popular Computing Weekly* November 8)

Main features of the portable machine include a single microdrive, flat screen display, and a price of around £300

The design of this new machine is based on that of the Spectrum and it will be fully compatible with all current Spectrum software.

Entirely battery operated, the machine will use C-MOS Ram technology, which uses relatively little power, and is therefore ideally suited to the

continued on page 5

QL network by Prism

A COMPUNET-style communications network and database is being planned for QL owners

The QL network is being planned as a joint Sinclair/Prism venture Prism, which already runs the Micronet 800 Prestel database, will be primarily responsible for developing and setting the new system up

"Negotiations with Sinclair are still in their very early stages at the moment," explained Richard Hease, Prism's managing director "We are planning something that will be for QL owners only, so it will be like Compunet in that sense At the moment, we are looking at the different networks that could possibly run the system."

Prism will also be the exclusive distributors of a QL dedicated modem, manufactured by OE, and due for launch at the Which Computer? Show in January

The OE modem will be available in three separate units Q-con is the interface connecting with the QL's Serial 2 port It can be purchased separately so that an alternative modem

continued on page 5

CHRISTMAS SOFT HITS

INSIDE **AMSTRAD DISC DRIVE REVIEW**



)View

Two machines in two weeks — the QL+ and the Spectrum Portable. If Sinclair carries on like this we'll be up to our knees in micros by the New Year.

What Sinclair is doing is actually very sensible. It has two basic design frameworks — one, an ultra-low-cost design based around the Z80 chip — the Spectrum. The other a more sophisticated concept using the 32-bit 68000 series of processors — the QL.

However much you want to spend Sinclair can offer an answer with machines priced at £130, £180, £400 and £500.

Yet before the Spectrum Portable is possible Sinclair has to make a fundamental decision about display type. With its flat-screen TV it has pinned its hopes on conventional TV technology — the cathode ray tube. Despite the considerable development effort expended to produce the flat tube, the result is disappointing. The black and white screen is very small, with only a narrow viewing angle and the picture tends to be unstable.

For the TV it is an acceptable compromise. For the Spectrum Portable it would be useless — imagine *Tasword* on a 40-column screen less than two inches wide. It just isn't on. Sinclair could certainly push to produce a bigger, better flat-screen tube, but, fundamentally, the conventional TV tube, whether it is cleverly bent so as to give the illusion of being flat or not, isn't the answer.

Anyone who has seen the Sanyo liquid crystal *colour TV* will realise that Sinclair must think again. A liquid crystal display is a digital technology; its picture is perfectly stable, and it consumes little power, making it ideal for a battery-operated device.

Not only that but six inch liquid cyrstal displays are now a commonplace option on many portable business micros.

)Presents...

)Futures...

Hi Rom Lo Rom for the Amstrad. Siel's low-cost MIDI music keyboard reviewed and Dragon Star Game

Editor David Kelly **News editor** Christina Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Editorial secretary** Geraldine Smyth **Advertisement manager** *David Lake* **Assistant advertisement manager** Alastair Macintosh **Advertisement executive** Tom Watson **Classified executive** Diane Davis **Advertising production** Lucinda Lee **Administration** Theresa Lacy **Managing editor** Duncan Scot **Publishing director** Jenny Ireland

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ABC

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Computer Trade Association Magazine of the Year

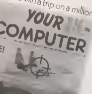
Land yourself a trip on a million pound computer.

In December's Your Computer there's a chance to win a trip on a million pound flight simulator.

There's a feature on advanced computer graphics that looks at Pioneer video discs and includes graphics routines for the ZX81, Spectrum, BBC, Dragon and Oric. Plus a review of the new Yamaha computer synthesizer. And lots, lots more.

December's Your Computer is out now. Fly down to your newsagent and get it.

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Parker pulls out

AMERICAN software company Parker Brothers has announced it is withdrawing from the software market in this country

"The product planned for Britain for 1984-5 has been withdrawn," explained a Parker spokesman.

"However, I don't think this is a permanent withdrawal. Pal: toy which owns Parker Brothers, feels that the market is no longer viable. Still, if the market turns favourably I think it will reconsider the decision — perhaps at the 1986 Toy Fair

Parker ran into problems because most of its software turnover came from titles for the Atari VCS machines. When Atari reduced its software prices down to £9.99, Parker continued to charge £29.99 and sales dropped.

"Our Spectrum and Commodore 64 releases were on cartridge and disc, respectively — again expensive products relying on high profit margins. The market share wasn't large enough.' Parker has also suffered because Rom software for the Spectrum never took off and the penetration of disc units into the C64 user base is the UK is a fraction of the figure for the US.

Coleco

Continued from page 1

40,000 is quite wrong"

Another Ideal Toys' spokesman further commented, "The company is to concentrate less on electronic goods and more on a broad product range such as CBS's Cabbage Patch Doll, and Child Guidance series of educational toys, which satisfy the needs of the market place"

After its launch, as the star of the 1983 summer Consumer Electronics Show, the 128K Adam computer system has been plagued by problems, first with late delivery and then with the reliability of its high-speed tape drive

Its price was recently cut dramatically in the US, leading to speculation that it may be withdrawn from the American market after Christmas — rumours which CBS strenuously deny.

QL Network

Continued from page 1

can be used if desired. Q-con also contains the built-in software which provides the Prestel operating system. This software is also available separately on Microdrive.

Q-mod, the second part is a V23 modem, operating at 1200/1200 baud (half duplex) and 1200/75 baud (full duplex)

Q-call, the third part, gives an auto-dial auto-answer facility

Prices for the units are Q-con. £79.95, Q-mod: £79.95, and Q-call £39.95

Details from OE North Point, Gilwilly Industrial Estate, Penrith, Cumbria.

Express transfer to Quicksilva

TONY Crowther successful C64 author of *Potty Pigeon*, *Suicide Express* and *Wanted. Monty Mole*, has signed up with Quicksilva to market his next two releases.

Tony left Gremlin Graphics a couple of months ago, and has spent the intervening time setting up and expanding Wizard Development, a BBC hardware and software company

His two games to be marketed by Quicksilva are *Black Thunder* and *Gryphon*, both for the Commodore 64

"*Black Thunder* is a revamped version of Suicide Express — I've done a lot of changes on-screen and altered the name. *Black Thunder* will be more of a 'finished' version than the original release" said Tony

Black Thunder should be available in December, with *Gryphon* appearing just after Christmas. Both games are provisionally priced at £7.95.

Spectrum portable

Continued from page 1

portable machine

The flat screen display for the portable is likely to be based on technology developed for the Sinclair flat screen TV

Continuing development work on the display will mean that the Spectrum Portable is unlikely to be launched before mid-1985

Only one castle for Atari

ATARI Corporation (UK) has taken legal action against MRM Software over MRM's *Castle of Gems* game for the BBC

Atari claims that *Castle of Gems* is a copy of *Crystal Castles*, an arcade game for which Atari owns the rights

"The dispute with MRM was resolved out of court," said Jon Dean, Atari's UK product manager. MRM has undertaken not to advertise, sell, supply or distribute any further copies of *Castle of Gems*

"Our attention was first drawn to *Castle of Gems* in a computer magazine review which commented on the similarity between the two games," Jon continued. "When we saw the game ourselves, we counted 32 distinct similarities. Such similarities between games could include, for instance, the colours used, the graphics, type of scrolling and so on.

"This action is only the first of several we intend to pursue fully. We hold the licence to a number of games, such as *Pacman, Donkey Kong*, and *Pole Position*, and it is not in Atari's interest to have unlicensed versions of these games on the market. There are a number of companies which do have unauthorised versions of our games on release, and if necessary, we will take them to court"

Atarisoft's own conversion of *Crystal Castles* for the BBC is due to appear in December at £9.99

The company is also planning to convert the game for the Atari 800XL early next year

BT bias for rights to Elite

THE rights to convert Acornsoft's highly successful title *Elite* for machines using the Z80 processor were up for auction last week and British Telecom's software arm, Firebird, gained the licence for 'a substantial sum'.

This gives Firebird the option to convert *Elite* to the Spectrum, Amstrad CPC 464 MSX and the long-awaited Enterprise computers, all of which use the Z80 processor

"Firebird will definitely be producing a Spectrum version, and probably a CPC 464 version," said Jacqui Lyons of Marjacq Scripts, agents for *Elite's* authors Ian Bell and David Braben

When released, *Elite* will form part of Firebird's 'gold' premium range of software. Firebird has already released games in its 'silver' or budget priced series

Elite on the Spectrum is expected to cost around £15 and is planned to be available in April-May 1985

As yet there are no firm plans to produce versions for MSX

More news on page 7

New machines for Deus



Programmer Andy Stagg with one of Deus ex Machina's 'stars', Ian Dury.

AUTOMATA's *Deus ex Machina* is to be converted for the Commodore 64 and Amstrad CPC464.

The Amstrad conversion is being done by Andrew Stagg, who first programmed *Deus* for the Spectrum. Freelance programmer Colin Jones is working on the Commodore version

"We are making the scoring system slightly more accessible for the new machine, so that it is easier to finish with a positive score,' said Mel Croucher of Automata. "Some of the screens on the Commodore will be slightly more elaborate, but apart from that it will be a straight conversion."

Deus ex Machina on the Commodore 64 and CPC 464 should be available at the beginning of January, with both versions priced at around £19

Adventures on a budget

MASTERTRONIC has launched the first of a new series of budget-priced adventure games to retail at just £2 99.

The first releases, under the label Master Adventurer, will be *Se-Kaa of Assiah*, *Black Crystal* and *Volcanic Dungeon*.

The last two have already appeared under the Carnell label. Ex-Carnell heads Roy Carnell and Stuart Galloway are now working for a division of Mastertronic, Mastervision.

"*Volcanic Dungeon* has been substantially rewritten, and graphics added, for its rerelease. *Black Crystal* will be sold on two cassettes, amounting to 180K of programming altogether," said Mastertronic managing director Martin Alper.

"Stuart Galloway and Roy Carnell will continue to write a number of adventures for the Master Adventurer label.

"We settled on £2 99 as a realistic budget price, because of the relative complexity of adventure programming,' Martin continued. "*Black Crystal*, however, will be £3.99, since the package comprises two cassettes."

All titles are available for the Spectrum. *Se-Kaa of Assiah* will also be available for the Commodore 64 and a 64 version of *Black Crystal* should be released in the New Year.

Argus teams with McCartney

ARGUS Press Software is to release a computer game based on the new Paul McCartney film *Give my Regards to Broad Street* in January to coincide with the film's release in this country

The game will be one of Argus's new Mind Games series which includes *American Football* and the recently launched *Alien* (Popular Computing Weekly, October 4).

The film *Give my Regards to Broad Street* is largely the brainchild of Paul McCartney, who directed and stars in it along with wife Linda, Tracey Ullman, Ringo Starr and Barbara Bach.

"The storyline of the game follows the film quite closely and has been written with Paul's help," said Peter Holme of Argus

Argus has gained the worldwide rights to the computer game of Broad Street, which will initially be released for the Commodore 64 and the Atari at £6 95. Argus is also considering a Spectrum version

Letters

Left hooks

Your observation on the size of our CP/M (*Popular Computing Weekly* Vol 3 No 46) might be tempered by consideration of the following points.

A 64K CP/M would not allow as much space to Basic as does the approach adopted by our disc system.

The price of CP/M software is classically £260 per module for things like integrated accounts, databases and the like. We offer these (with no loss of function) at £30-60.

All the hooks are present in the system design to permit some enterprising soul to devise an MSDOS 512K add-on if they so desire — but then it might not cost £199 and offer dual operating systems and be bundled with *Dr Logo*, might it?

William Poel
Amsoft
Brentwood House
169 Kings Road
Brentwood
Essex

More ways to run than one

I've found something interesting on the Commodore 64. If you plug a joystick into Port 2, hold in the fire button and press 'N', it displays *Load Press Play on Tape*, the equivalent of *Shift/RunStop*.

Paul Valentino
67 Mumman Road
Blackheath
London SE3

Version therapy

I was most surprised to read the comments of Graham Taylor in his review of Fighter Pilot in this week's *Popular Computing Weekly*. His references to the "superior facilities" of the 64 must surely be in the context of sprite-oriented arcade games.

For Mr Taylor's information, the 6502 processor in the CBM64 is far inferior to the Z80 (Spectrum) when extensive high-speed 16-bit mathematics is involved, eg, 3D co-ordinate geometry, aircraft flight characteristics, etc.

Retaining all the features of the Spectrum version demanded considerable enhancements to the algorithms used, and to achieve such a faithful conversion is a credit to the programmer.

With regards to the comments "less impressive" and "disappointing", this view is not shared by the many distributors and customers who have patiently waited for *Fighter Pilot 64*.

D K Marshall
Digital Integration
Watchmoor Trade Centre
Watchmoor Rd
Camberley
Surrey

We still feel that the Spectrum version of *Fighter Pilot* is better than the Commodore one.

Dragon lives on

As the proud owner of a Dragon 32 computer which has had more than its fair share of what I would call 'non-support', I would like to know if you are going to support the Dragon more than you have done in the past few weeks.

Even though the so-called 'professional' people and some software houses don't like it, hundreds of owners do, and would like more of the good information you have published in the past.

M F Baker
5 South Close
Bury St Edmunds
Suffolk

You have no need to fear. We will continue to support the green-screen beast so long as there are enough readers who want us to do so!

Checkmate chess test

Here is a little challenge for your chess playing readers. How good do you think your computer chess program is? How many moves can it see ahead? Can it solve mate in two moves problems? Perhaps

WHITE MATES IN 2

you'd like to try it out on this one: give the computer a king and both rooks. Give yourself a lone king. Can it checkmate you?

John Rundle
26 Western Road
Aldershot
Hants GU11 3PL

PS If any reader sends me an SAE plus a 20p coin I will send them 12 diagrammed chess position problems with solutions.

Software libraries

I was surprised to read Phil Roger's comments in *Peek & Poke*, in the October 17 issue, with regard to Software Libraries. 'I must confess that I get a little uneasy when I see adverts for the software hire companies — if an individual attempted to do this he would probably be threatened with dire punishments.'

It would seem that to Phil, software libraries might verge on the illegal. While appreciating his concern, libraries do provide an excellent opportunity for computer owners to sample a great variety of programs. How many times has a superficial two minutes snatched in a shop prompted you to buy, only to find after an hour's play at home that the money was wasted? We find to a large extent that after hiring tapes members purchase them.

One other point is that all our Spectrum and Commodore titles are hired only with the supplier's permission and most magazines, including PCW, will only accept advertisements from companies who state this.

Peter Johnson
Director
Softenk
122 South Circular Road
Dublin 8
Eire

Thank you Sinclair

As the liaison officer for PHAB (Physically Handicapped and Able Bodied) in the Derby area I have recently been trying to start a computer course for the physically handicapped within the Derby area, as I feel that in the near future a large amount of office work could be done from the home by disabled people, via a computer network.

In my search for computer equipment I contacted Sinclair Research and would like to thank them through your magazine for their kind donation of a 48K ZX Spectrum.

C D Thompson
101 Princes St
Derby
DE3 8NS

Spoilt for choice

Re your November 15 issue containing the Amstrad top ten games list, compiled by Boots.

This indication of the most popular games of the CPC464 is totally misleading, as in Bristol at least, of well over 80 games available for the machine, Boots have only ever stocked half a dozen.

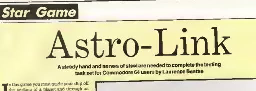
Three days ago they had *Roland on the Ropes*, *Roland Goes Digging*, *Graf Spey*, and *Hunter Killer* — exactly four titles.

The Amstrad is not even advertised in the store although the Spectrum and Commodore C16 are — the shop had no joysticks, printer and no plans to stock the disc drive and had 'no idea what software, if any, is on order.'

PJ Long
3 Victoria Place
Bedminster
Bristol



Ingenious...
Leisure Genius
presents
THE COMPUTER EDITION OF
Waddingtons
MONOPOLY
THE COMPUTER EDITION OF
MONOPOLY
Registered Trade Mark of Waddingtons Games Ltd
PROPERTY TRADING GAME
For the Commodore 64



Astro-Link

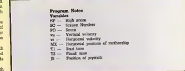
A steady hand and nerves of steel are needed to complete the testing task set for Commodore 64 users by Laurence Beattie

In this game you must guide your ship off the surface of a planet and through an asteroid belt, in an attempt to dock with an orbiting mothership

On docking — this isn't easy — you move to a harder screen with a greater number of asteroids. The quicker you complete your mission, the more points you will be awarded.

The ship is controlled by joystick, which accelerates your craft in any direction, and there is a constant gravitational pull towards the planet that you must overcome

The program is well documented with *Rem* statements.



Program Notes
Variables
HP — High score
SC — Screen Number
PO — Score
vu — Vertical velocity
vr — Horizontal velocity
MX — Horizontal position of mothership
T1 — Start time
T2 — Finish time
JS — Position of joystick

```
1 REM**** [illegible]          ****
2 REM**** [illegible]          ****
3 REM****                      ****
[illegible] HP=0
[illegible] PRINT"[illegible]" [illegible]
[illegible] POKE54276 [illegible] POKE5[illegible]   10
 POKE5427[illegible] POKE[illegible]   [illegible]15
REM***SET UP [illegible]**
10 POKE5[illegible]50,1[illegible] POKE5[illegible] POKE5[illegible]   12
POKE5[illegible] 15 REM***SCREEN COLOUR***
[illegible]
  *** SPRITE [illegible] ***
[illegible] FOR [illegible] REM[illegible] POKE   [illegible]
REM***SPRITE DATA***
[illegible] FOR [illegible] NEXT   [illegible]046 205
[illegible] REM**SPRITE POINTERS
[illegible] POKE5[illegible] REM***MULTICOLOUR
[illegible]
[illegible] REM*** [illegible] ***
[illegible]   [illegible]4
[illegible] PRINT"[illegible]" FORX=0TO[illegible]
PRINTTAB[illegible]"." NEXT
[illegible]   [illegible]
[illegible] NEXT POKE53262 100 REM**
[illegible]
[illegible] NEXT [illegible] REM [illegible]
[illegible] REM [illegible]
[illegible] POKES [illegible] FOR [illegible] REM TO [illegible]
[illegible] NEXT
[illegible] POKE[illegible]4 0
[illegible]
[illegible] REM***MAIN LOOP***

[illegible] REM***MOTHERSHIP***
[illegible]
[illegible]
[illegible] LUTUPS
[illegible] IF[illegible]THEN[illegible] POKES[illegible] PEEK   [illegible]
[illegible] POKE5[illegible] POKE5[illegible] 50
[illegible] REM***ASTEROID***
100 FORX=5[illegible]48TO5[illegible]
101 IFPEEK[illegible]THENPOKE [illegible] PEEK[illegible]
[illegible] THEN11[illegible]
10[illegible] IFPEEK[illegible]THEN[illegible]
[illegible] GOTO110
105 [illegible] POKE5[illegible]64
[illegible]PEEK[illegible]64[illegible]
[illegible] REM***[illegible]***
110 IFPEEK[illegible] PEEK [illegible]
IFPEEK[illegible] THEN1[illegible]
111 IF[illegible]THEN[illegible] POKE[illegible]
[illegible] GOTO1[illegible]0
11[illegible] PEEK[illegible]THEN[illegible]   [illegible]64
PEEK[illegible]   -53246 [illegible]
1[illegible] NEXT REM***[illegible]ASTEROID***
130 [illegible]THEN[illegible]
135 IF[illegible]-1THEN4[illegible]
[illegible] REM*** SHIP MOVEMENT***
[illegible] PEEK [illegible]
[illegible]
[illegible]0 240   350 3[illegible]
[illegible] 4[illegible] 410 420
[illegible] GOTO[illegible]
[illegible] POKE54[illegible] RETURN
[illegible] RETURN
[illegible] RETURN
[illegible] RETURN
[illegible]0 [illegible]=VU-[illegible] VR=VR-1 RETURN
[illegible] VU=VU+2 VR=VR-1 RETURN
400 VR=VR+1 RETURN
410 [illegible] VR=VR+1 RETURN
420 [illegible] VR=VR+1 RETURN
4[illegible] IFPEEK(5[illegible])[illegible]THEN[illegible] [illegible]AVITY
435 REM***LEFT+ RIGHT LIMITS***
440 H=PEEK(53262)+VR
441 IFH<0ANDPEEK(53264)>127THENPOKE[illegible]264,
PEEK(53264)-128 H=255+H [illegible]0470
442 IFH<=24ANDPEEK(53264)<128THEN[illegible]
VR=0 GOTO470
443 IFH>255ANDPEEK(53264)<128THENH=H-255
POKE53264 PEEK(53264)+128 GOTO470
447 IFH[illegible]ANDPEEK(53264)>127THEN[illegible] VR=0
470 REM***TOP + BOTTOM LIMITS***
475 V=PEEK(53263)+VU
476 IFV<=[illegible]0THEN[illegible]=30 [illegible]=0
477 IF[illegible]=200THEN[illegible]=200 VU=0
500 POKE53262,H POKE53263,[illegible]
510 GOSUB700 IF[illegible]=0THEN5
512 IF[illegible]=1THEN45
520 T2=TIME PRINT"TIME [illegible]INT([illegible]
PRINT"[illegible]" [illegible]
700 REM***COLLISION***
705 [illegible]=PEEK(53278)
710 IFX=0ORX=96THENX=[illegible] RETURN
720 IFX=192ANDPEEK(53260)=PEEK(53[illegible]
THEN[illegible]
722 POKE54273 4 POKE5427[illegible] 0 POKE54[illegible]   [illegible]55
POKE5427[illegible] 129
725 POKE53294 [illegible] FORX=1TO100 POKE204[illegible] 20[illegible]
POKE2047 [illegible]4 NEXT
726 POKE5[illegible]3 PEEK([illegible])-128 POKE[illegible]78 255
POKE[illegible]
730 POKE542[illegible] PO=PO+50/((T2-T)[illegible]
735 SCREEN=SCREEN+1 IFSCREEN[illegible]THEN [illegible]TORE [illegible]
RETURN
740 POKE646,4 PRINT PRINT"[illegible]YOU SC[illegible]",
INT(PO*100[illegible] FOR[illegible]-1TO 500 NEXT
745 REM***FIRE TO START***
746 POKE646,4
750 POKE5[illegible],0 POKE[illegible] 11 PRINT
[illegible]FIRE TO START
751 POKE[illegible] PRINT
[illegible] INT PO*100[illegible]
752 IFINT(PO*100)>HP THENHP=INT(PO[illegible]
753 PRINT[illegible] HIGH SCORE [illegible],HP
754 IFSCREEN=[illegible]THENPRINT"[illegible]
[illegible]CONGRATULATIONS [illegible] CRAFT [illegible]ED [illegible]
755 X=45 Y=[illegible] POKE5[illegible]4 [illegible] POKE5[illegible]
[illegible]271 1 POKE[illegible]
760 IF(PEEK(5[illegible]321 AND16)[illegible]0THEN78[illegible]
770 POKE5327[illegible] 0 POKE53271 0 POKE[illegible]
RESTORE [illegible] RETURN
780 X=X+1 Y=Y+1 IFY=230THEN755
785 POKE53248 X POKE53249 Y GOTO7[illegible]
996
997
998 REM*** DATA ***
999 REM***ASTEROID***
1000 DATA0 0,0,[illegible] 0,9 64 [illegible]
[illegible] 111 [illegible]
1001 DATA43 86,2[illegible],15[illegible] [illegible]151,154   [illegible]44 41
11[illegible],156 4[illegible] 1[illegible]3 [illegible] 10 [illegible]
1002 DATA213,181 42,149,[illegible] 10,1[illegible]   [illegible] 149 64
0,21,64 [illegible]
1003 REM***SHIP***
1004 DATA0 36 0,0 [illegible],0 0 1[illegible],0 0   [illegible]
[illegible] 151 1[illegible] 151 1[illegible] 151 1[illegible]
1005 DATA2,151,192,2,151 1[illegible] 15   [illegible] 151
1[illegible] 2 1[illegible]1 132 2 1[illegible]1 1[illegible]
1006 DATA[illegible] 151,192,0 44,0 0 44 0   [illegible] 2 151
192 2 151 1[illegible] 0
1007 REM***MOTHERSHIP***
1008 DATA[illegible] 151,1[illegible]2,2,151 1[illegible]2,0,1[illegible]   [illegible] 44 0 0
44 [illegible] 151 1[illegible] 151 1[illegible] 151 1[illegible]
1009 DATA2 1[illegible]1 1[illegible] 2 151,192 2 1[illegible]   [illegible] 151
1[illegible] 1[illegible]1 142 2 151 19[illegible] 2 151 13
1010 DATA[illegible] 151 1[illegible]2 2 178 12[illegible],0,151   [illegible] 0,0
[illegible] 0 0
1011 REM***[illegible]***
1012 DATA[illegible] 0 0,0 140 0 0,0 0,[illegible] [illegible]   [illegible] 1[illegible]
[illegible]
1013 DATA4,255,1[illegible] [illegible]1,1[illegible] 0 4[illegible]   [illegible]
0 [illegible]36 1[illegible] 12[illegible] 1[illegible] [illegible]4 [illegible],1[illegible]
1014 DATA0 165 11[illegible]   [illegible] 0 [illegible]7,0,
0 1[illegible] [illegible]8 [illegible],17 [illegible]
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Celtic rangers

***John Cook** delves into Celtic myth with Gargoyle Games*

It never rains in Southern California, but 5000 miles away in Dudley it does; in fact it buckets down incessantly with a vengeance. However, this West Midlands town, complete with ruined castle and zoological gardens (both world famous in Dudley according to Jasper Carrot) may soon become a place of pilgrimage for computer adventurers as it is the home of Gargoyle Games, producer of *Tir Na Nog*, arguably one of the top ten Spectrum games this year — certainly in quality and if there is any justice in this world, sales too.

Gargoyle Games is not a household name. They are not an offshoot of a megacorporation nor are they your common or garden teenage geniuses who, whilst taking a break from unified field theory at university, taught themselves Z80 machine code and BMX racing. The truth is quite different.

In fact, Gargoyle was formed less than a year ago, by two collegues, Greg Follis and Roy Carter, who, after a combined total of almost 30 years experience in commercial programming techniques, decided to write games for home computers.

Gargoyle needed some marketing expertise so Greg and Roy enlisted an old friend, Ted Heathcore, whose experience, surprisingly enough, was in running a clothing business. "Menswear is really very similar to software," he told me and while I have yet to be seen sporting matching cassette box and tie, *Tir Na Nog* seems to be doing well under his guidance.

I asked the others a little about their computing backgrounds, neither providing the expected answers. Greg shrugged, "Well, after getting chucked out of Art School I did loads of jobs, and seemed to end up in computers." Roy continued, "I was working as a computer operator in a company and the programmer left. I think they took me on because I was cheap!"

Gargoyle's first release, in April of this year, was *Ad Astra*, an entertaining little space wars shoot-em-up. Whilst this program was never going to change the world, it attracted something of a cult following, and was successful enough to encourage them to invest further time and effort in the next program, which turned out to be TNN.

For the uninitiated, *Tir Na Nog* is based on the exploits of a Celtic hero, Cuchulainn, and his deeds in the ancient otherworld *Tir Na Nog*, which means 'Land of Youth', his task being to unite the four parts of the Seal of Calum. The game oozes class with outstanding graphic animation, enigmatic puzzles and a genuine atmosphere of mystery and adventure.

Greg, who designed TNN, told me something about the original idea. "The Celtic myths have a great feel to them," he commented, "and no-one has covered them before."

The program comes with a booklet containing extracts from the Leabhar Glaodhach, the Book of Tears, which are themselves very evocative. Greg looked a bit sheepish. "We wrote those extracts ourselves," he admitted. "There is in fact no such book ... but it's a bit difficult to tell that to someone who's just spent hours in a library looking for it."

Perhaps the most striking feature of the game, initially, is the animation of the central character. Cuchulainn strolls around, hair waving behind him, in a most convincing fashion. How is it done? "The scrolling is done off-screen, then put on screen, phased between interupts," explained Roy. "Likewise the many frames for Cuchulainn, using a mask and overlay so you can't see through him. Using the mask only has the effect of making him look invisible ... which is essential for completing the main quest."

I asked how long it took, real-time, to complete the game. "Don't ask me... I keep getting lost," said Roy ... this may explain why it is he who does most of the actual programming. "In the final phase of testing though, Greg went through the whole quest and it took him six hours." That's with knowing where everything is and what everything does! Bearing that in mind they expect months to pass before a correct solution is found.



TNN is certainly big, but how big? Greg grinned. "About 3000 miles worth of road," he answered, "but to store it as pure map would take up far too much memory, so what we do is store a template of the area, and specify the appropriate alterations as you move along."

I've been having a little trouble with TNN so I ventured a few specific questions of my own, like how do you kill Sidhe. "You must carry at least two weapons, and thrust with one of them," came the answer.

Also, what does the face in the Hunters' Cave actually say? Certainly not what is shown printed on screen. Gargoyle Games collectively smirked. "You'll have to work that one out for yourself." I was told. Lip readers drop me a line. "We're thinking of producing a screen sized animation synchronised with a sound output so it talks to you," continued Greg. "It links in with some of the research we've done on Artificial Intelligence. it would be programmed to argue with you." That's for the future though, what's coming up next?

"There's the Commodore 64 version of TNN, that should be coming out after Christmas, we're also considering an Amstrad conversion. Then there's the pre-quel to TNN, set in the land of the living — this time in a city. This will limit the size of the game, so we have more space for animations ... which we think we are getting pretty good at." After that? "We're trying to develop a game on *The Hunting of the Snark*, by Lewis Carrol, if we can get the rights. It'll be a three times removed lateral thinking adventure," he added with relish.

"What we are tying to do is to make games where you can create your own sub-plots within the adventure," remarked Roy. "We've had phone calls from people that have hidden items within the game, save it, then challenge their friends to find them." "As if the original wasn't hard enough.

Further into the future, the team intends to move into small business software, albeit under a different name. "I think the arrival of home micros has removed the fear from computers," said Greg. "In five years time, all the kids who are using computers at school now will be at work, and in business. There's a lack of the kind of good software for small companies, so we aim to write it."

You know, if Gargoyle keep this up, the castle and the zoo are in for some pretty heavy competition in Dudley.

TÍR NA NÓG



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Tir Na Nog – the kingdom of the sidhe, the home of dagda's cauldron.

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Addition

Hardware *Amstrad DDI-1 Disc Drive* **Price** £199.99 **Supplier** Amstrad Consumer Electronics

With the launch of its DDI-1 disc drive unit for the CPC 464 machine Amstrad is now offering the cheapest CP/M computer available controversy may surround precisely how 'standard' the system is (it bears the Digital Research stamp, version 2.2), and some people may be overawed with the idea of such an operating system taking over their home computer

Fortunately, though, you can view CP/M as "icing on the cake" The disc system comes in two parts, drive and interface The disc drive itself is housed in a box that also contains a mains power supply; it is rather long, but nevertheless compact. The drive itself is of the 3inch Hitachi/Panasonic format, using fully enclosed discs In operation the drive is both fast and quiet, with a good solid response when loading and ejecting Connection to the interface is achieved with a ribbon cable complete with a parallel connector for plugging in a second drive. Two disc units is the most that the system can handle The interface plugs onto the exposed edge connector at the rear of the CPC 464. This arrangement is not particularly stable, (remember the ZX81 Ram pack wobble?), but gold-plated connectors are used. The interface itself contains a floppy disc controller chip (uPD765A) and a 16K 'sideways' Rom that occupies addresses &C000 to &FFFF This puts it in competition with not only the screen Ram but also the Basic interpreter

The CPC 464 runs the Rom with the lowest number as the foreground program. Basic is Number 1, while the disc operating system Rom is 7, so when the firmware sets up the system it initialises the DOS but returns control to Basic. By cutting a wire link inside the interface it is possible to make the DOS's Rom become number 0, which means the computer will power up in CP/MN But I am getting ahead of myself — the first thing people do with their new disc drive will *not* be to delve inside and start hacking away at the circuit baud.

How does the system work in normal use?

It operates in two basic modes — Amsdos, the Amstrad disc operating system — and under CP/M.

When you first attach the disc drive and interface there is no immediately obvious change, the computer powers up in Basic However, as soon as you use what would normally be a cassette command, it is the disc rather than the cassette that responds. Stream 9 has been re-routed and the firmware jump-blocks are overwritten during power-up

Amsdos as this level of operation is called, also adds a number of extension commands to Basic, provided by the resident systems extensions (RSX) and therefore preceded by a bar symbol. It is possible to select the default drive, erase and rename files, and switch back to cassette operation, either for reading, writing, or both. Issuing the commands *|TAPE. IN* and *|DISC OUT* for example, will result in a *Load* operation fetching a program from tape and a *Save* putting it on to disc. To provide the RSX calls and give Amsdos work-space, some Ram needs to be borrowed from the computer; it appears that just over 1K is lost to Basic The extra routines associated with the DOS are vectored through Ram jump-blocks, and these are documented in an appendix to the firmware manual.

So far, very good. The disc drive provides a storage method about 50 times faster than cassettes, and automatically makes back up files when files are closed (it renames the old file with a *Bak* suffix and deletes any other back-up) Each side of a disc's 40 tracks holds 180K, of which the directory occupies 2K.

With CP/M, however, 9K is lost to the system, and there are two other formats possible. Vendor format leaves space for CP/M information, to avoid you selling the property of Digital Research (who employ some very good lawyers!). IBM format allows discs produced on an IBM PC with CP/M 86 and 3inch disc drive to be read by the CPC 464 and vice-versa. This last option gives 154K capacity

What delights await when the |CPM command is used? Assuming a system disc is in place, some data is loaded the screen changes colour and the screen notifies that we are in CP/M. A *Dir* command will show that the system disc provides not only the 'standard' utility programs, such as *ED*, *MovCPM*, *Pip*, *Asm* and *Ddt* (these last are an 8080 assembler and de-bugger respectively) but a number of Amstrad additional commands such as *Cload* and *CSave* (tape/disc transfer), *Disc-copy*, *SetUp* and *Amsdos*.

There are two restrictions placed on any CP/M programs you might wish to run—other than the fact that they need to be on 3inch disc As the CPC 464 firmware uses all of the Z80's restarts but RST 6, this is the only restat that is available to CP/M. DDT, for example, normally uses RST 7 so the Amstrad version has to be patched to use 6 Other programs may also have to be patched to use *Rst6*

The other is the contentious matter of the size of the transient program area — how big a program can be run in Ram? Most CP/M systems allow about 56K for programs to use, but as 16K of the CPC

464's memory is used for screen display, it is not surprising that there is only 39 5K available to run programs in Rom. This is not as serious a drawback as it might seem — the whole point of CP/M is that portions of program and most of the data is held on disc and overlayed into Ram when required. Some programs will need to be altered, which, while not a layman's job, should not be a major task.

I have seen such items as Microsoft Basic and *Wordstar* running on the Amstrad without patching, but these both cost more than the computer so who would want to run them anyway?

Amsoft expect to provide a number of CP/M programs fully compatible and tested with the CPC 464, at affordable prices. The first examples will be Quests' *ABC* accounts package (£99 for the three basic modules, instead of a claimed £750 for other CP/M machines) and the *Microscript/pen/spread* word processing, database and spreadsheet programs at £50 each.

If you want anything else, Amsoft will put you in touch with a company that can 'port' across any CP/M program at retail prices — Timatic Systems of Newgate Lane, Fareham, Hants.

What must not be forgotten is that, even without CP/M, the disc system for the Amstrad CPC 464 would still be a very worthwhile addition — add CP/M and you have much more than just icing on the cake.

Jeff Naylor

Bass pattern

Hardware *Commodore Music Maker* **Micro** Commodore 64 **Price** £29 95 **Supplier** Commodore

At around £30 the Commodore Music Maker is priced low enough to encourage those who've previously been wary of forking out for music peripherals for their 64s to do so It is also clearly aimed at the user who might be thinking of buying a small Casiotone or similar home organ.

The package has been produced for Commodore by Music Sales — a company previously best-known for its vast range of *play in a-day* songbooks featuring everybody from Abba to ZZ Top

Music Maker comes with its own mini-songbook containing such gems as *Chopsticks Jingle Bells* and *Sailing* arranged for the simple, rather tacky plastic 'overlay' keyboard also provided as part of the package

This plastic keyboard — in Commodore co-ordinated colours — clips over the computer keyboard allowing you to feel a little bit like you're a proper synth while you're actually hitting QWERTY keys A clever idea, although one that would have benefited from more thoughtful design.

MUSIC MAKER
F1 CHANGE BASS 2 F2 RHYTHM SELECT 1
F3 POLY PLAY F4 CHANGE OCTAVE
F5 SELECT VOICE 6 F6 MODIFY VOICE
F7 SEQUENCER F8 SAVE/LOAD MENU

The software, available either on disc or cassette, is not unimpressive On loading you are right into the program and can immediately tap out a tune on the keyboard. A menu offers you the options of selecting one of eight voices, changing octaves — two octaves are available at any one time, altering voice envelopes and filter characteristics, playing in poly-mode (up to three notes played simultaneously), selecting one of three preset rhythms and altering them by changing or removing the bass pattern and, finally, sequencing (with a Save and Load option).



All this sounds impressive, but the facilities offered are, in fact, small considering the full potential of the 64's SID sound chip

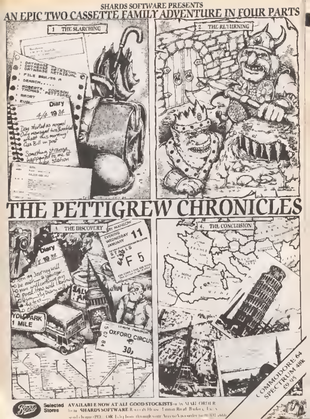
The sequencer, for example, holds a maximum of only 256 notes and does not allow poly-mode or even 'overdubbing' (playing one track to the accompaniment of an already sequenced one)

That said, the system does have some nice features — the slide effect, the tuning facility and the ability to tap out different rhythms for a single sequence particularly caught my fancy

The inclusion of the simple mechanical music keyboard overlay is only really warranted to give the system more 'instant appeal.

If you don't need the illusion of a music keyboard and are quite content to use the C64's Qwerty keyboard then I would recommend in preference Supersoft's *Music Master* which costs sightly less than £30 or Waveform's *MusiCalc* which costs somewhat more

Gary Herman



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Reviews

Supreme

Program *Knight Lore* **Price** £9 95 **Micro** Spectrum **Supplier** Ultimate Play the Game, The Green, Ashby de la Zouch, Leics

There are many, many reasons for choosing an XYZ computer in favour of a CDE, for going home grown, American, or even turning Japanese My opinion, for what it's worth, is simple the Spectrum is the only micro I know where the quality and amount of software available is high enough to make it worth purchasing for that reason alone. *Manic Miner* and *Lords of Midnight* are two examples We now have another

Knight Lore from Ultimate is the most technically supreme game that I have ever played. It is a hideously addictive and compelling arcade/adventure and certainly the first program that comes close to merging the two genres

The scenario is a direct sequel to *Sabre Wulf*; as Our Hero, you have been bitten by the werewolf and are suffering mighty transformations One such has dumped you in a 128 room (I've found 111) castle wherein lives a malevolent wizard with his cauldron. Starting at any of five locations you have to negotiate the hazards of the castle whilst collecting items that litter the rooms. Each room is viewed in 3-D from a top corner and the graphic design is wonderful. Each room is filled with a variety of problems to overcome

Time elapses according to a sun/moon display towards the bottom of the screen and when the moon appears you make a quirky transformation into a fairly cute werewolf and back to Swordman during the day

The most impressive aspect of *Knight Lore* is not only the sheer fun of playing but the obvious care and intelligence with which it was written. How to defeat attribute problems? Only use two colours (this actually adds to the atmosphere of the game and makes mapping far easier — there are green, purple yellow and blue rooms) Also the objects collected can be used to solve not only the objects of the game (making a potion to cure the werewolf's curse, but to assist in some of the arcade section.

It is impossible to give more than the merest hint of what is involved in *Knight Lore* and all I can suggest is that you buy a copy (and a Spectrum if necessary) as quickly as possible

Gordon Sneddon

Hang around

Program *Bewarehouse* **Micro** Spectrum 48K **Price** £4 95 **Supplier** Positive Image Software,

Dare you enter the *Bewarehouse*? It sounds like a line from a Spielberg movie poster, and the setting of a haunted warehouse holds similar promise. But the instructions foretell of greater horrors — 'Left', 'Right', 'Jump and 'Super Jump'

Is it? Can it be? Yes — it's another dodge the barrels, boxes and/or ghosts game

It does contain one unusual feature — instead of leaping over objects you can cling to one of two pipes above your head — timing is less crucial, but hanging around uses up energy and gives you a lower score If you are hit by the boxes, from above, you are flattened, while the rolling barrels knock you head over heels which is neat.

This is not enough, though, to disguise what is a rather boring game Sound is reasonable but the graphics are characterless apart from your little figure's victory dance when a successful crossing of the warehouse floor is made More objects and the appearance of pursuing ghosts add to the difficulty but don't really contribute much variation.

At an ultra bargain price this might have been acceptable, but this is mid-price

Bewarehouse is a good name — it deserved a better game

John Minson

Hard rock

Program *Boulder Dash* **Price** £8 95 **Micro** Commodore 64 **Supplier** State Soft, Business and Technology Centre, Bessemer Drive, Stevenage, Herts.

The popularity of maze games continues unabated. *Boulder Dash* is one of the most fascinating The objective is to tunnel your way round a series of caves collecting as many jewels as you can on your way As you dig through the ground you have to be careful since if you undermine any boulders they will fall until they hit something solid, ie, you, if you're underneath. Deadly fireflies and butterflies in the caves will also destroy you given half a chance If you can avoid all the hazards, then, dripping with jewellery, you can move on to the next cave

Each cave covers several scrolling screens, and the later ones are increasingly difficult The action demands not only fast reaction speeds, but also careful planning

Thoroughly addictive.

Richard Carfield

Hell-bound

Program *Beebul* **Micro** Spectrum 48K **Price** £1 99 **Supplier** Scorpio Gamesworld, 307-313 Corn Exchange, Manchester

Beebul has virtually only two controls — to move 'Left' and to move 'Right' and it's none the worse for that.

It's a platform game, but instead of climbing and jumping and slide sideways and drop from level to level.

Your aim, as you descend through Hell, is to collect various treasures There are more of these than you can collect on one descent, so a teleport is thoughtfully provided to return you to the top to

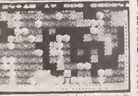
come down again by another route.

This being Hell, there are also assorted bouncing nasties, and dodging them calls for very careful timing. As you can approach several treasures from either side, and collecting the last one immediately transfers you to the next screen, a bit of strategy is called for too.

Beebul is not the most sophisticated game you will find on the shelves, but it is far from the worst. Its monsters have character, it moves smoothly and pixel accuracy is possible without the premature death syndrome that bugs some slay-happy sprite games.

At this price it is worth having and makes you wonder how some software houses can justify far higher prices for less enjoyable games.

John Minson



In the dark

Program *Bristles* **Price** £8.95 **Micro** Commodore 64 **Supplier** State Soft, Business and Technology Centre, Bessemer Drive, Stevenage, Herts.

Interior decorating gets the micro treatment in *Bristles*, a US production by First Star, marketed in the UK by State Soft. The houses you are contracted to repaint in the cause of the game seem to have been invaded by poltergeists, since you have to spend some of your limited time dodging various flying paint pots and wandering paint buckets. Additionally, there is a nuisance called Brenda the Brat who has the annoying habit of sticking her handprints on your freshly painted walls which you then have to repaint. Brenda, however, will keep her hands to herself for a while, if you bribe her with sweets.

Six skill levels make up the game. At level one you use normal paint in good light. In later stages you have to paint with clear varnish which means that you cannot see which rooms have been completed. Later still, you have to work in the dark so that you cannot even see the rooms let alone tell whether or not they are painted!

The game gave me a lot of fun, and presents quite a challenge.

Richard Corfield

Souped-up

Program *Overdrive* **Micro** Electron **Price** £7.95 **Supplier** Superior Software Ltd., Regent House, Skinner Lane, Leeds 7.

This review has taken a long time to get round to. Not because I've put it off and put it off, but because I couldn't pull myself away from the race track.

Let me explain. You are the driver of a very (and I mean very) fast souped-up racing car — the red one. The computer is in charge of all the rest — the blue ones. Imagine an open road as straight as the Romans built them, and only the hills in the distance and an expanse of green all around you. Until you put your foot down cars are whizzing past you at a phenomenal speed and disappearing into the far distance. You put your car into gear, step on the gas and you are away. The speed and excitement increase, as the tiny blue spots in the distance fast loom up into the shape of your opponents. Gauge your speed until the opportunity to slip between them or overtake on the inside occurs, then step on it and the road is yours again.

Overdrive is a must for all Electron owners. The game does credit to the machine's sound effects, graphics (wait till you smash), and above all, the 3D effect which is very impressive.

Fred Short

Plausible

Program *Interdictor Pilot* **Price** £17.95 **Micro** Commodore 64 **Supplier** Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex.

There are a few flight simulators for the Commodore 64 but *Interdictor Pilot* is the first I have come across which simulates space flight. As you might guess from the name the program simulates flight in a craft called the Interdictor Mk. III. A substantial pilot's instruction manual accompanies the cassette and this book explains, in plausible sounding sci-fi terms, all that the prospective pilot needs to know about the functions and operation of the craft.

The Interdictor is a combat patrol craft. In the simulations, you can practise take-off and landing from star-base, inter star-base flight and encounters with other ships (both friendly and hostile). A handy facility allows you to paralyse the other craft, so that you can examine them at close range. You can even run the simulator in slow motion for the tricky bits. Once you are proficient with the simulator you can try your hand at some 'real' missions, where you will have no control over events.

There are too many details here to do it justice in a short review. It is essential to read the manual — which contains an amazing amount of information — before having a go, but it is well worth the effort.

Richard Corfield

Good value

Program *QL Assembler* **Price** £29.95 **Micro** (Version AH and above) **Supplier** Computer One, Science Park, Milton Road, Cambridge.

While this assembler is not a full macro assembler it is powerful enough for all but the most advanced programers as it can perform conditional assembly and will produce the code in a format to be used with a standard Sinclair linker program.

The assembler — and the editor which is supplied with it — may both be multi-tasked with any a Basic program or any other machine code program which may also be multi tasked. The space left which you can use for other programs can be greater than 30K. You may also use this spare memory in conjunction with the assembler to load a copy of a file before it is assembled, so increasing the assembler's speed.

The manual supplied gives information on both programs, as well as giving an example of how to add commands to Basic. Chapter 6 gives a very useful look up table of all the opcodes and shows what the state of the CPU's flags will be after an instruction has been executed.

This assembler is good value. It does the job most people want it to do and is cheaper than the Sinclair assembler which is going to sell at £39.95.

Roger Thomas



Are you only using

To only play games on a Commodore computer is like asking Albert Einstein to work out the square root of four.

The computer's brain barely ticks over.

To really stretch it, you need more interesting software programs. For example, record keeping, interactive education, stimulating adventure games or word processing.

And for those you need peripherals.

Like a Commodore disk drive, a really fast storage and retrieval system with a vast memory.

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COMMODORE 64



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Xmas soft hits

From the thousands of software packages released this year we've tried to separate the exciting, innovate programs from the Manic Miner clones, furtive freddies, boring multi-screen ladders and platform games, illiterate adventures, mega-hyped rip-offs, glossy crud, 'I think people are getting bored by a good graphics' excuse, and many other time-wasting, finance-exhausting, excuses for original thought. It wasn't easy. Graham Taylor burrows out from under the pile to give you the details

Spectrum

The Spectrum has a lousy keyboard, rotten sound and colour attribute problems that cause objects to change colour as they pass over one another — but it *still* gets more exciting and innovative software developed for it than any other machine.

Last year the Ultimate games, *The Hobbit* and *Valhalla* were the front runners. What are this year's wonder programs?

To begin with the familiar Ultimate Play the Game has consistantly produced software never worse than good and in *Knight Lore* we have its greatest achievement ever, a program so graphically superb it, as *Jetpac* did before it that it ups the stakes on just what Sir Clive's ageing machine is capable of — a thundering new beat that to the industry

Knight Lore features Sabreman, a character seen in previous Ultimate games and now, presumably, a sort of mascot figure for the company. He is stuck in a castle of well over 100 rooms the victim of a curse such that as day turns to night (indicated by the movement of a sun or noon arcing left to right on the bottom of the screen) he turns into a rather dopey-looking warewolf.

Sabreman has to collect objects from the rooms and deposit them in a specific order in a wizard's cauldron somewhere deep in the castle thus lifting the curse. Obviously the main part of the game is negotiating the various rooms and retrieving the various objects. The quality and style of the graphics are what lift the game away from all the other dodge and collect games.

Each of the castle rooms is represented with perspective and a sense of depth unsurpassed on home computers the vantage point being as though seen through a camera mounted high in one corner of the room. Rooms are populated by guards, ghosts spiky balls, prisoner style rovers and sundry tables, ornaments, and other suitably medieval objects.

In most rooms the only way to get to the exit or desired object is either by clever timing, jumping before the lodge collapses to reveal spikes beneath, etc or ingenuity. Tables may be shoved around to provide surfaces from which to jump, standing on an object you have collected may help you get over an otherwise impassable wall.

Apart from anything else the game is a triumph of design — the various characters are brought to life through cartoon type animation.

Doomdark's Revenge

The 3D illusion works perfectly simply because of the care that has gone into the drawing and design. A near faultless game that like other Ultimate games leads you to say — "surely no more is possible on the Spectrum?"

Technically much simpler but astonishingly innovative is *Deus Ex Machina* from Automata, a program like no other. *Deus* uses the computer as part of a total experience that also includes music dialogue and sound effects to tell a story that mixes Aldous Huxley with rock concept albums, the Marx brothers and genetics to tell the story of life developing within the confines of a giant computer. An audio tape containing the music and dialogue is linked to the computer program via an introduction, spoken by Jon Pertwee. Other notables involved include Ian Davy, Frankie Howard and E P Thomson.

Although the effect is somewhat similar to a (very psychedelic) movie you are not merely a passive viewer. Whilst the program follows an inevitable sequence within each section are games' in which you must try to assist the development of life

Combining visual events with musical events makes for a sense of total involvement in the program seldom, if ever, achieved in conventional computer games. It remains to be seen whether *Deus* represents the first step in a bold new direction for computer games or whether it proves to be a one off creative cul de sac.

Another strong contender in the computer movie stakes has recently emerged. *Tir Na Nog* from Gargoyle Games features exceptional graphics and animation and a quest so difficult to achieve the manufacturers expect it to take over a year to complete. They even suggest it may be necessary to consult your local library on ancient Celtic myth to unravel some of the conundrums.

Knight Lore

The game features the hero Canschulin who wanders the land of youth looking for the pieces of an ancient seal. A couple of the sections he may simply stumble across but most are already in the possession of other beings in the land — to get them back he must complete various sub-quests

The actual graphic of the hero is animated using many more 'frames' than usual which makes its movement much more realistic than that seen before — his hair even waves about as if blown by the wind. The landscape is also impressively created over dozens of screens with distant castles and volcanoes ancient monuments and secret doorways — all helping to create a sense of

Continued over the page

Deus ex Machina from Automata

atmosphere.

Many other titles are worthy of consideration on the Spectrum. The recently released *Doomdark's Revenge* actually improves upon *Lords of Midnight* — the original, by developing the graphics options available and scope of the game. Both games combine adventure and strategy styles in a complex and visually appealing way. *Backpackers Guide To the Universe* is a good quality scrolling screen arcade game for those into alien bashing, but with enough extras to keep the interest up for those who went something more complex.

For those requiring more serious software Triptych brought out a range of packages for most micros which both teach and facilitate such things as decision making and planning. *Tasword II* is still just about the best wordprocessor around for the Spectrum. If you want to write your own game try the new improved picturesque machine-code utilities. Try Campbell Systems *Masterfile* if you want a filing system.

Knight Lore *Ultimate, The Green, Ashby de la Zouch, Leicestershire* ***Deus ex Machina****, Automata, 27 Highland Road, Portsmouth, Hants* ***Tir Na Nog*** *gargoyle Games, 74 King Street, Dudley West Midlands* ***Doomdark's Revenge*** *Beyond, 3rd Floor Lector Court, 153 Farringdon Road, London EC1* ***Backpacker's Guide to the Universe*** *Fantasy, Fauconberg Lodge 37a St George's Road, Cheltenham, Glos* ***Tasword II****, Tasmans, Springfield HOuse, Hyde Terrace Leeds,* ***Picturesque Assembler****, Picturesque, 6 Corkscrew Hill, West Wickham, Kent* ***Masterfile*** *Campbell Systems, 15 Rous Road Buckhurst Hill, Essex.*

Commodore 64

This year saw a flood of American software for this machine released in this country.

Much was no better or worse than home produced material but there were a few gems.

Ghostbusters proved that just because a computer game is a spin-off from a popular movie and is produced by a large company it doesn't have to be complete dross. On the contrary *Ghostbusters* is a pretty remarkable game in many ways.

It mixes arcade zapping with a veneer of strategy elements, adds great graphics and even greater sound and produces a computer game that really does reflect the lively, ebullient and dazed qualities of the film. First you buy your ghostbusting wagon, traps and so on, then after consulting your map you must find and capture the ghosts. The scene changes from 'shop to map to road to ancient mansion as appropriate and the graphics are large, colourful and funny — none of the ghosts look too threatening. However what really makes the game is the computer speech and the astonishing soundtrack music.

The hit music to Ghostbusters with its infectious rhythm and chorus is faithfully recreated on the Commodore 64 using only the three channel SID chip — a triumph of programming and arranging.

But it doesn't end there, using advanced digital techniques speech is produced by computer — not the usual Dalek cackle but recognisable and inflected sentences and phrases. In the intro section you can get the computer to shout 'Ghostbusters' in time to the music.

Tony Crowther must be responsible for more quality games on the Commodore than any other single programmer. His distinctive work first with Alligata and then with Gremlin Graphics has seen few equals in terms of playability and graphics.

Ghost busters from Activision

From a string of excellent and distinctive programs like *Loco Suicide Express*, *Monty Mole*, I have picked *Potty Pigeon* as the best simply because I like the plot and as a game it seems to appeal to a slightly different audience from the usual tribe of teenage males.

The idea of the game is to fly a pigeon around collecting twigs and taking them back to the nest. Mostly this involves flying down on to the road to pick up each twig and returning to the nest. As the game progresses so traffic increases on the road and obstacles like other birds appear in the sky.

A simple plot but excellent graphic design produces a detailed background and a pigeon which is no mere blob but possesses both detail and character. Like many of Tony's games, the chief strengths of the game are the quality of the graphics and a well judged sense of pace.

Whilst there is an official *Zaxxon* version available for the Commodore, it is not as compulsive as a game which, though not an exact copy of the original, achieves to a far greater extent the sense of drama and strong visual sense that marked the original out.

Potty Pigeon from Gremlin Graphics

Havoc has *Zaxxon*'s edge-on, 3D cut-away view as well as occasional missiles and bombs to be negotiated but greater emphasis is given to the piloting element — some sections of the game require absolutely precise flying.

Perhaps more important still is atmosphere, the plane is piloted through what appears to be the empty streets of a vast city full of towering skyscrapers and gigantic monuments. The only sound (apart from the occasional missile) being the drone of your engine.

There are a number of other excellent programs for the 64. *Summer Games* from Epyx — released by Quicksilva in this country — is a version of the popular *Track and Field* game which actually surpasses the slot-machine original. CBS's UK venture into software contains at least one gem in *Impossible Mission* again created by Epyx. It features a daredevil action man, complicated plot and excellent speech like *Ghostbusters*. Listen out for the devilish "kill him my robots" for real hamacting. Sublogic's *Flight Simulator II* is very good – if expensive. Beyond's Lords of Midnight is woth a look. If you are interested in music then try *Musicalc* from Musicalc UK. Quicksilva's Doodle is a good drawing program. If you want a word processor try *Paper Clip* from Batteries included slightly cheaper is *Micro Wordcraft* from Androgenic. Again from Androgenic — *Swift* is a low cost spreadsheet.

Ghostbusters *Activision 15 Harley House Marylebone Road, London NW1* ***Potty Pigeon****, Gremlin Graphics, 82 Carver Street Sheffield S1* ***Havoc****, Dynavision, PO Box 96 Luton* ***Summer Games****, Epyx, released through Quicksilva, Palmerston Park House, 13 Palmerston Road, Southampton* ***Impossible Mission****, Epyx, released through CBS, Ashbrook House 3-5 Rathbone Place London W1* ***Flight Simulation II****, Sublogic, available through The 64 Supplies Company PO Box 19 Whitstable, Kent,* ***Lords of Midnight*** *Beyond Lector Court, 153 Farringdon Road London EC1* ***Musicalc****, Musicalc UK, The Paradox Group, The Metropolitan Enfield Road, London N1* ***Doodle****, Quicksilva, Palmerston Park House 13 Palmerston Road Southampton* ***Paperclip****, Batteries Included, available through The 64 Supplies Company PO Box 19, Whitstable, Kent* ***Woodcraft*** *and* ***Swift****, Androgenic, PO Box 54 Reading, Barks*

BBC

Whereas with the Commodore and the Spectrum it was no easy task deciding on what programs represented the best available on the machine — with the BBC it is absurdly easy

Elite from Acornsoft is the best games program available on the BBC and rivals anything available on any other machine In fact *Elite* is to get an advertising campaign on TV all to itself.

The BBC is a fast and powerful machine in many ways (apart from memory) but, perhaps because of the way its various, educational uses have been stressed in the past, games on the machine have been lacklustre and technically far inferior to those on other machines Relative to previous BBC software *Elite* represents an enormous leap in sophistication and complexity, relative to games on other machines it's

Elite from Acornsoft

a smaller, but still significant, step forward.

Elite is the space game to end all space games, it has everything — journeys through space, docking attack sequences, trading in legal and illegal goods, space pirates, hyperspace, short and long-range scanners, other planets, space stations meteors, etc, etc All objects are represented in a form of vector graphics ie, they are constructed in outline only but, and this is 40% of the game, they are represented in three dimensions so you can fly around and behind them.

The aim is initially to make a profit but beyond that you must try to move up the ranks by winning battles and out-manoevreing the enemy

You buy goods cheap on one planet, sell them at a profit on another The classic, and most dangerous example of this principle is with narcotics — these are cheap and freely available on some planets, but illegal and thus worth a fortune on others.

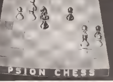
People have been known to cancel holidays and stay up all night playing Elite. Acorn even believes that it is selling Electrons to people who buy the machine just to play the Electron version of the game Need I say more

Confronted with the above there are few programs in anything like the same league on the BBC, but Ultimate has produced its original *Jetpac* for it It also has a version of *Scrabble* which plays a pretty mean game from Leisure Genius Watch out too for Island Logic's excellent music program, *The Music System* If you need word a processor try the old standard *Wordwise*

Elite *Acornsoft 104 Hills Road, Cambridge* ***The Music System***, *Island Logic 22 St Peters Square, London W6* ***Jet Pac*** *Ultimate The Green, Ashby-de-la Zouch, Leicestershire* ***Scrabble*** *Leisure Genius 3 Montagu Row London W1,* ***Wordwise*** *Computer Concepts, Gaddesden Place Hemel Hempstead, Herts;*

Amstrad MSX and QL

Three machines well two machines and a design standard for a number of others — which were released this year.



Inevitably new machines don't get really spectacular software at the beginning The programmers haven't had the time to get totally familiar with the full range of possibilities particularly for a machine like the QL, based on a relatively unknown processor chip Nevertheless it is possible to separate the good from the bad and all the systems now have at least one program that seems to be noticeably better than the rest.

The Amstrad ought to get some excellent software — based on the ageing but fast Z80 with 64K, excellent graphics and reasonable sound the basic material is all there The first program to really do any sort of justice to the Amstrad is *Codename Mat* produced for Amsoft by Micromega.

Codename Mat is a sophisticated version of the old computer chestnut, *Star Trek* in which you travel the universe seeking out and destroying the invading forces Sophisticated graphics and various new features have turned what started life as a rather tedious strategy game into a space epic — not *Elite* but excellent fun.

You command your starship and two other fleets, a map shows the sites of planets, moons baddie forces and your other ships which may be sent to any region by your command. Mostly the screen displays your cockpit window as you hurtle through space Using battle computers, defensive shields and photon torpedos you must rid each section of the galaxy of invaders.

The game is partly shoot 'em up partly flight simulation, partly strategy The illusion of hurtling through space is well done with an occasional passing meteor for extra realism. A compelling game that can take hours to play Others for the Amstrad — if you want an adventure try the Nemesis *Arnold* programs.

There are a number of companies working on MSX material but as yet, perhaps because not enough machines have yet been sold, there is little that is genuinely impressive. One exception is Konami's *Track and Field* version known as *Hyper Olympics*. This is a near perfect recreation of the slot-machine original — unsurprising really since Konami were responsible for the original.

The game, ideal for an Olympic year involves putting a little man through various Olympic events, various lengths of race, pole vaulting, hammer throwing, hurdles and so on. The detail on the graphics is remarkable and the way the machine controls have been adapted to test a different skill at each event is ingenious Many a computer is likely to have two of its keys battered to

Continued over the page

Xmas soft hits

hits by over-eager contestants in the 400 metres.

And what of the QL, Sir Clive's technically advanced but controversial new machine? For a whole variety of reasons software has been exceptionally slow in coming through — microdrive, unfamiliar processor production delays, doubts over market, etc

In fact, apart from the Psion packages which come with the machine there is almost nothing currently available that can be recommended.

The main exception to the above is Psion's *Chess* program for the machine Not only has the program beaten dedicated chess machines in tournaments not only does it have a wide variety of playing options but, most spectacularly of all, the game is represented in 3D.

Your perspective on the board is such that the opponent's pieces appear to be further away — edge on, instead of viewed from above, the norm up to now The illusion of pieces moving behind and in front of one each other is astonishing and reveals just what the machine is capable of given programming effort There are now about four assembler packages available for the QL so we should see more programs next year

Codename Mat, *Micromega, 230-236 Lavender Hill London SW11,* ***Trial of Arnold Blackwood*** *and* ***Arnold Goes to Somewhere Else***, *Nemesis 10 Carlow Road, Ringstead, Kettering Northants,* ***Hyper Olympics*** *Konami, released through Micro Peripherals 69 The Street Basing, Basingstoke Hants;* ***QL Chess***, *Sinclair Research, Stanhope Road, Camberley Surrey*

Dragon and Oric

Two machines that suffered major set-backs this year were Dragon and Oric. Dragon Data collapsed and future development of either the Dragon 32 or 64 now looks very doubtful. Machines ended up being sold off very cheaply in the shops

However, almost at the same time as the collapse occured the general level of Dragon software seemed to improve significantly — mixed-mode graphics and sprites took the place of the green screen and poor quality block graphics One game in particular was universally declared best ever on the dragon — Wintersoft's follow up to the *Ring of Darkness* called *Return of the Ring*

Return of the Ring is a machine-code adventure with complex sentence analysis, hi-res pictures and 3D sequences The computer even gets to control its own characters. As in *Dungeons and Dragons* style games, you may define your own character allotting points in different amounts to different qualities before you begin the game How intelligent, strong lucky, etc, you are is a balance you decide

Parts of the game involve buying and trading, others are more like text adventures — something for every sort of adventurer in fact If more programs had been of this quality earlier or had been produced sooner for the Dragon, its eventual fate might have been different.

The Oric didn't actually die that year but all the signs of market failure are there — the Oric is currently on sale at highly reduced prices in many shops and there is little really good software available. For those who have the machine good news comes in the form of a company that is importing some of the best French software for the machine The Oric was considerably more successful in France than it has been in the UK.

Of this new software one of the most interesting 'new' titles is *Tyrann* by No Man's Land. Like *Return of the Ring* this game takes some of the basic *Dungeons and Dragons* concepts and adds to them. You can choose to create one of four general types of character, Warrior, Thief, Druid or Magician. Each type has different strengths and weaknesses and as you play the game so the nature of the character will develop — gaining experience from fights, etc. You control six characters in all, each defined from the choices above

You explore a village starting point for your quest, each character may be moved in turn, characters may pass objects to one another, there are spells to be cast and secret doors to be opened. The screen display shows a simple 3D line drawing of your movement among the streets and through the doors of the village Through solving problems and winning fights, characters may move up to a new level whereupon they are provided with new, more potent spells When your team has reached an average of Level II then the main part of the adventure may be loaded This contains more objects more mazes, more battles, etc Although technically quite simple, *Tyrann* is nevertheless a compulsive adventure that should keep you going for weeks

Return of the Ring *Wintersoft 30 Uplands Park Road, Enfield Middx;* ***Tyrann***, *No Man's Land High Tech Units 1 and 2, Conlon Developments Watery Lane, Darwen Lane, Darwen, Lancs.*

Return of the Ring from Wintersoft



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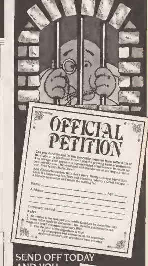
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Words of one syllable

***Roger Barker** takes the bother out of using microdrives on the Spectrum 48K*

Microdrives have made loading Spectrum programs a very much quicker process however, they are marred by the horrendous syntax of the Microdrive commands For the uninitiated, the command to load a program called "Prog" from Microdrive 1 is *Load 'M' 1, 'Prog"* I decided to write a command so that programs could be loaded simply by entering '*' followed by the program name eg **Prog*

The routine works by changing the address held in the system variable *Vector*, so that any command causing an error is first checked by the coding starting at address 65439 If the command does not start with an asterisk then it is ignored, if it does then it is processed.

The name of the program after the asterisk is extracted and stored, then the command line is extended to hold the full Microdrive *Load* command, although this is invisible to the user An assembler listing is given for those who wish to study this technique in more detail. The whole thing takes just 97 bytes.

First key in the listing for the loader program and run it to set up the machine code and store it on Microdrive as "st" Next key in the "*Star*" program — if you leave the Rem's out it is only one line — and save it with the command *Save""M" 1,"star Line 10* To make the command available simply load *"star"* The command will remain installed until you switch off your Spectrum, and any other programs from Microdrive 1 can be loaded with just an asterisk and their name.

Because the coding resides in Ram there will always be a slight risk of over writing it, what a pity that Sinclair have not put a few similar commands in the Interface 1 Rom — which has about 300 bytes of free space.

Star Program

```
   1 REM *** "STAR  PROGRAM
   2 REM ***
  10 CLEAR 65438  LOAD *"m",1,"s
 - CODE   POKE 23735,159  POKE 23
 - 6,255
```

M/C Loader

```
  10 REM *** M/C CODE LOADER
  20 REM ***
  30 CLEAR 65438
  40 LET TOTAL=0
  50 FOR N=1 TO 97
  60 READ BYTE
  70 POKE (65438+N),BYTE
  80 LET TOTAL=TOTAL+BYTE
  90 NEXT N
 100 IF TOTAL<>6566 THEN PRINT "
ERROR IN DATA STATEMENTS.   ":OP

 110 SAVE *"M",1,"st"CODE 65439
97
 120 DATA 215,24,0,254,42,194,24
6,1,33,243
 130 DATA 255,6,10,229,54,32,35
16,251,225
 140 DATA 6,11,229,197,215,32,0,
193,225,254
 150 DATA 58,40,29,254,13,40,7,5
40,22
 160 DATA 119,35,24,234,237,91 9
7,92,27,27
 170 DATA 33,227,255,1,29,0,237,
176,237,83
 180 DATA 97,92,205,183,5,195,19
3,5,58,239
 190 DATA 42,34,77,34,59,49,14,0
0 1
 200 DATA 0,0,59,34,32,32,32,32,
32,32
 210 DATA 32,32,32,32,34,13,128
```

Assembly Listing

```
*HISOFT GENS3 ASSEMBLER*
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Pass 1 errors  00

              1  *C-
FF9F     10              ORG    65439
5C61     20  WORKSP      EQU    #5C61
0018     30  GETCHR      EQU    #0018
01F0     40  ERR#6       EQU    #01F0
0020     50  NXTCHR      EQU    #0020
05B7     60  ST_END      EQU    #05B7
0EC1     70  END1        EQU    #0EC1
FF9F     80  START       RST    16
FFA0     90              DEFW   GETCHR
FFA2    100              CP     '*'
FFA4    110              JP     NZ,ERR#6
FFA7    120              LD     HL,NAME+1
FFAA    130              LD     B,10
FFAC    140              PUSH   HL
FFAD    150  ST1         LD     (HL),' '
FFAF    160              INC    HL
FFB0    170              DJNZ   ST1
FFB2    180              POP    HL
FFB3    190              LD     B,11
FFB5    200  ST2         PUSH   HL
FFB6    210              PUSH   BC
FFB7    220              RST    16
FFB8    230              DEFW   NXTCHR
FFBA    240              POP    BC
FFBB    250              POP    HL
FFBC    260              CP     ':'
FFBE    270              JR     Z,ST4
FFC0    280              CP     13
FFC2    290              JR     Z,ST3
FFC4    300              DEC    B
FFC5    310              JR     Z ST4
FFC7    320              LD     (HL),A
FFC8    330              INC    HL
FFC9    340              JR     ST2
FFCB    350  ST3         LD     DE,(WORKSP

FFCF    360              DEC    DE
FFD0    370              DEC    DE
FFD1    380              LD     HL,COMMND
FFD4    390              LD     BC,29
FFD7    400              LDIR
FFD9    410              LD     (WORKSP),D
E
FFDD    420  ST4         CALL   ST_END
FFE0    430              JP     END1
FFE3    440  COMMND      DEFB   #3A #EF
FFE5    450              DEFM   '*"M",1'
FFEB    460              DEFB   #0E #00,#0
0,#01,#00,#00,#36
FFF2    470  NAME        DEFM   '
.
FFFE    480              DEFB   #0D,#80

Pass 2 errors  00

Table used     162  from   308
```



BUGGY
BLAST
SPACE MISSION SIMULATION

Audio visual

*Got a video recorder and a BBC B? Then try Video Indexer by **A J Carter***

Do you use a video recorder? Do you know exactly what programs have been recorded on each of your cassettes? Do you often lose parts of programs because you do not know how much recording time is left on a cassette? If your answers are 'yes', 'no' and 'yes' then read on, because the following program is definitely for you.

This program generates an index for your cassettes and also calculates how much time you have left on the tape. The program asks for the length of the cassette, the number of programs currently on the cassette, and the title and length of each of the programs. It then generates a test-card type background and then prints the index on the screen.

To get this index on to the video cassette you have to take the aerial lead out of the socket on the back of the video and plug the TV lead from the computer into the same socket. (It would be more convenient to do that before you run the program.) If you plug your computer into a video and find that you do not get a picture, do not panic! This just means that you need to tune a channel on your video to suit your own computer. Mine seemed to be very close to Channel 38.

Once you have got a clear picture of the copyright message, *Load* the computer with the indexer program, then place the video cassette in the video recorder. Check that the video cassette has been fully rewound to the beginning.

Run the computer program and enter the data as required, and when prompted by the program, start the video recorder recording. Leave it recording until the index has been on the screen long enough for you to have read it at least twice, then stop the video recording.

It might be wise not to index existing cassettes unless you are sure there is enough tape at the beginning or you do not mind losing some of the credits at the start of the first program.

Program Notes

Line No	
10	Calls the data input procedure
20-30	Sets the 16 colour display mode and calls the display procedure
60	Declares the specified variables as 'Local' to the display procedure
70	Turns the text cursor off.
80-110	Draws first band of colour
120-150	Draws second band of colour
160-190	Draws third band of colour
200-230	Draws fourth band of colour
240-270	Draws fifth band of colour
280-310	Draws sixth band of colour
320-380	Outputs the contents of the cassette, the length of the cassette and the recording time left on the cassette
390	Stops the program from finishing until the video recorder has been stopped.
410-430	Beginning of the data input procedure. Declares variables 'Local' to this procedure.
440-450	Outputs prompts and inputs the length of the video cassette and the number of programs on the cassette.
460	Reserves memory space for the titles of the programs in the form of a single dimension array
470-540	Inputs the titles of the programs on the cassette and calculates the free recording time in mins.
550-600	This is the data verification loop and if data fails the data input procedure is called recursively.
610-630	This section synchronises the computer display to the video recorder

Variables

Simple	L%	the length of the video cassette
	PL%	the length of a program



	TPL%	the total length of all the programs (This is incremented inside the data input loop.)
	P%	the number of programs currently on the cassette. (Used to control the extent of the data input/output loops.)
	LR%	contains the recording time left on the video cassette
Control	I%	is used throughout the program as a general looping variable and is also used to control the X-coordinates of the background draw function.
String	V$	this contains the response from the verification routine and is acted upon depending whether it is y or n.
Array	T$	this contains the titles of the programs on the cassette.

```
  1 REM ******************************
  2 REM *Ramp Software (c)1984 *
  3 REM ******************************
 10 PROCinput_data
 20 MODE2
 30 PROCdisplay
 40 END
 50 DEFPROCdisplay
 60 LOCAL I%
 70 VDU23,1,0;0;0;0
 80 FORI%=0TO213
 90   PLOT69,I%,0
100   GCOL0,5:DRAW I%,1279
110   NEXTI%
120 FORI%=214TO427
130   PLOT69,I%,0
140   GCOL0,6:DRAW I%,1279
150   NEXTI%
160 FORI%=428TO641
170   PLOT69,I%,0
180   GCOL0,2:DRAW I%,1279
190   NEXTI%
200 FORI%=642TO855
210   PLOT69,I%,0
220   GCOL0,4:DRAW I%,1279
230   NEXTI%
240 FORI%=856TO1069
250   PLOT69,I%,0
260   GCOL0,7:DRAWI%,1279
270   NEXTI%
280 FORI%=1069TO1280
290   PLOT69,I%,0
300   GCOL0,1:DRAWI%,1279
310   NEXTI%
320 PRINT TAB(6,0);"CONTENTS"
330 PRINT TAB(0,2);"1: " T$(1);
340 FOR I%=2 TO P%
350   PRINT TAB(0,I%+2);I%;":";T$(I%)
360   NEXT I%
370 PRINT TAB(1,28);"Len. left ";LR%;" mins"
380 PRINTTAB(2,26);"Length ";L%;" mins."
390 REPEAT UNTIL GET=32
400 ENDPROC
410 DEFPROCinput_data
420 LOCAL I%,V$,PL%
430 CLS
440 PRINT TAB(0,2);"What is the length of the
    Cassette, in (mins)";:INPUT L%
450 PRINT TAB(0,4);"How many programs are on this
    cassette ";:INPUT P%
460 DIM T$(P%)
470 PRINT"Type the titles & lengths (mins) of the
    programs on the cassette."
480 FOR I%=1 TO P%
490   INPUT T$(I%)
500   INPUT PL%
510   TPL%=TPL%+PL%
520   NEXT I%
530 CLS
540 LR%=L%-TPL%
550 PRINT TAB(8,0);"CONTENTS"
560 FOR I%=1 TO P%
570   PRINT I%;":  ";T$(I%)
580   NEXT I%
590 PRINT "Is this correct. (Y/N)";:INPUT V$
600 IF V$="N" OR V$="n" THEN PROCinput_data
610 PRINT TAB(7,26);"Hit <RETURN> and start
    video recording."
620 REPEAT UNTIL GET=13
630 ENDPROC
```

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Quill, Easel Archive & Abacus on the Sinclair QL

Alison McCallum-Varey

SUNSHINE

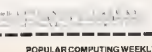
Just released from Sunshine is the latest book from the highly acclaimed QL QLassics series – and it's called *Quill, Easel, Archive & Abacus on the Sinclair QL*.

All these packages, which are included with every QL sold, are recognised as powerful in their own right but when working together with one another, they become highly effective problem-solving tools for business.

Alison McCallum Varey's book introduces you to all the four packages, but, most importantly, shows you exactly how to run them as a complete system.

This book essential for every QL Owner, will expand the day-to-day use of your QL, letting you run Quill and Archive in tandem for instance, and then outputting the results for graphic interpretation by the Easel package.

If you've Quill, Fasel, Archive and Abacus on your Sinclair QL, then you need *Quill, Easel, Archive and Abacus on the Sinclair QL*.



A bug in the works

The mystery of the unexplained crashes unravelled and solved by ***Andy Pennell***

When writing machine-code on any machine, the QL included, it's a real nuisance when you call it and the machine just locks, with no indication of what is wrong. Unfortunately, on the current QLs this can happen even if you are a perfect programmer, as there is a bug in the Rom that can cause a *Call* command to crash the machine! However, never fear, as this little 100-odd byte machine-code routine corrects it, so that *Call* will always work as it should.

Enter listing 1, *Save* it in case of errors, then *Run* it, and if you've got the data right then the bug is corrected. After this you can *New*, and it will remain, the only thing that can remove it being a *Reset*.

How, you may ask, can a bug in the Rom be corrected from software? Well, as you may know, the QL keeps a list in Ram of all procedures and functions, including those in the Rom. What's required is to look in this table for *Call*, and modify the bytes that define where the procedure is, so that instead of using the erroneous routine in the Rom, the improved routine supplied is used.

Listing 2 is the assembler listing, which starts by looking in the name table for any procedures of length 4, which includes *Call*. For each one found, the following bytes are checked and if it is indeed *Call* then the long word is re-defined. If it is not then the whole table is scanned, and if for any perverse reason *Call* is not found then an error will occur.

The problem with the Rom routine is that Word sized addressing has been used, which is fine until you have a large Basic program in memory of over around 28K, then it will crash. The new *Call* procedure is much the same as the old one, except that Long Word addressing is used, and that the parameters routine is accessed so that it works on all modern QL Roms. The bug exists on all QLs to date including the latest JM version, though this correction will only work on JM and AH versions because the vector used does not exist on earlier ones. When it gets corrected, this patch will still work, although it will be redundant.

One bug that QL owners may be interested in is the *Gosub* one — if you have a *Gosub* in a short form *For* loop the *Gosub* will never be called until the loop is about to finish. As *Gosub* is not actually a procedure, it does not have its routine in Ram, so the bug can't be corrected until the next release of the Rom.

If you don't understand about QDOS or the way SuperBasic works, then look out for my forthcoming book *The QDOS Companion* available from Sunshine Books towards the end of the year.

Listing 1

```
1000 REMark ****************************
1010 REMark *  CALL bug correction  *
1020 REMark *(c  Andrew Pennell 1984*
1030 REMark ****************************
1040 p=RESPR(120)1050 t=0
1060 RESTORE 1130 1070 FOR i=0 TO 115
1080 READ a:POKE i+p,a:t=t+a 1090 NEXT i
1100 IF t  10416 THEN PRINT#0:'Data
error":STOP
1110 PRINT"Code loaded  CALL bug
corrected'
1120 CALL p
1130 DATA 32,110,0,24,50,118,134,?
1140 DATA  1, 206 0, ,1 54,0,4
1150 DATA 114,0,10  0,0 14 80,1
1160 DATA 1  ,  8,0  8,99,2 0,11
1170 DATA 76 11 ,17,54,0,6 ,144 1
1180 DATA 10  0,2 5,236,12,54 0,
1190 DATA 114  ,102,0, 55, 26,12 ,4
1200 DATA 0,76,144,3 102,0 255,21
1210 DATA 12,54,0,76,144,4,102,0
1220 DATA 255,206,65,250,0 10,4  176
1230 DATA 1  ,3,66,1  3,70 11  ,5  120
1240 DATA 1, 4 73,17E,102,70  7,1
1250 DATA 10 ,14,21   74 0, 0 4 ,54
1260 DATA 15 ,0   246 6 ,254,15 ,4
1270 DATA  1  41   11
```

Listing 2

```
                    ******************************
                    * CALL procedure bug correction *
                    *                              *
                    * (c) Andrew Pennell 1984      *
                    ******************************

-0018             bv.ntbas equ $18
-001C             bv.nt    equ $1c
-0020             bv.nlbas equ $20
-0058             ca.gtlin equ $58

206F 0018                 move.l bv.ntbas(a6),a0         start
3??A 0002          loop   move.w 2(a6,a0.l),d1           name
D?EE 0020                 adda.l bv.nlbas(a6),a1
0C36 0004 9000            cmpi.b #4,0(a6,a1.l)           4 long?
6?00 001E                 beq codbe                      ... CALL
5088               next   addq.l #8,a0
B1EE 001C                 cmp.l bv.nt(a6),a0
6?E6                      bls loop
70F9                      moveq #-7,d0
4E75                      rts
0C?6 0043 9001     codbe  cmpi.b #'C',1(a6,a1.l)         is it CALL
6600 FFE?                 bne next
```

```
0C76 0041 0000          urcl.t # A  C =a a'.a)
6600 FF--               bne ne t
0C7E 004C 9007          cm  + # L  'fen e' =
6600 FFD8               bne ne t
0C74 004C 9804          cmp.l # L  1 a=. l =
6602 FFCE               bne ne *

                * it  s  rede ine it

41FA 0C0A               lea newcall(pc).a0
2D8C 9804               move.l a0 4(a6.a0 l)                        o BASI
4290                    clr l d0
4E75                    rts

                * new CALL procedure

7878 0118       newcall move.w $118 a4
4E94                    jsr (a4)                 get parameters
6614                    bne.s exit               if error
E585                    lsl.l #2.d7
578E                    beq.s badparam           # no params
C7AE 0058               add.l d7.bv,rtp a6)      redo maths sta

                * these re r two are wrong in the ROM

2F7C 9800               move.l 0(a6.a1.l) .-(a7)     start address
4CF6 7FFE 9804          movem.l 4(a6.a1.l).a0 a5 d1-d7  and registers
70F1            badparam moveq #-15.d0               ready to go to it
4E75                    rts                          start it for out
```



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A character set

Final helping of machine-code routines for the Dragon

by **Roger Walton**

This week's program provides the user with a full character set which may be used in *PMode 3* All the characters from *CHR$(32)* to *CHR$(122)* are provided. The characters will print as red-on-green if *Screen 1,0* is selected or as orange-on-buff if *Screen 1,1* is used.

The characters are built-up on a grid which is eight 'dots' wide by 12 deep Each dot is actually two bits wide in *PMode 3*, this means that each character is represented by 24 bytes of data.

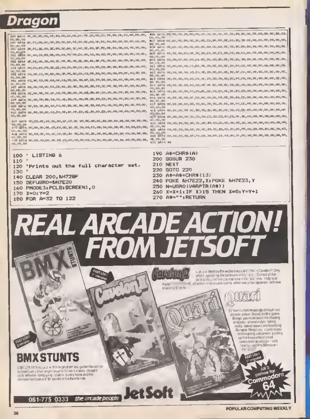
Basic Listing four gives the character printing routine and Basic Listing five will *Poke* into memory the data for each character Once Listing five has been run, the data may be saved using *CSavem "DATA" & H7590, & H7E18, & H98A.*

The printing routine gives a screen width of 16 characters and a screen depth of 16 lines The position at which printing is to start should be *Poked* into addresses *&H7E22* and *&H7E23* before the routine is called from *Basic*. The program requires that the string to be printed should be terminated by a *CHR$(13)* ie, return character Basic's *Usro* command is used to call the routine and the address to be called must be set-up using *Defusro-&H7E30*.

Listing six is an example to show how to use the character printing routine as part of a Basic program. It will print out the full character set on the screen Note that before using this, the programs in Listings four and five should have been saved to tape and then *Run* to enter the machine-code into memory

```
100 ' LISTING 4
110 '
120 '****************************************
130 ' PMODE 3 Character display program     *
140 ' Roger Walton, July 1984.              *
150 '****************************************
160 '
170 ' This program displays a full range
180 ' of characters from CHR$(32) to CHR$(122)
190 'The screen is 16 characters wide by 16 deep
200 'The position of the first character should be POKED
210 'into addresses &H7E22 (across position
320 'and &H7E23 (down position)
230 '
240 FOR LOC=&H7E20 TO &H7E78
250 READ N$:N$="&H"+N$
260 N=VAL(N$)
270 POKE LOC,N
280 T=T+N
290 NEXT
300 IF T<>7602 THEN CLS:PRINT"DATA ERROR":STOP
310 CLS:PRINT"M/C LOADED":END
320 DATA 20,02,00,00,1F,21,FC,7E
330 DATA 22,C1,10,25,03,5A,20,F9
340 DATA 34,06,A6,80,81,0D,26,03
350 DATA 35,06,39,C6,18,3D,C3,72
360 DATA 90,1F,02,33,06,8D,0F,4C
370 DATA 4C,81,20,25,E3,4F,5C,C1
380 DATA 10,25,DD,5A,20,DA,34,36
390 DATA 8E,06,00,30,8B,30,86,C1
400 DATA 00,27,07,30,89,01,80,5A
410 DATA 26,F9,C4,DC,EE,A1,EF,84
420 DATA 30,88,20,5A,26,F6,35,36
430 DATA 39
```

```
LISTING 5
PMODE3 character set
red-on-green
[illegible]
```



```
389 DATA 0C,0C,0C,0C,03,30,00,C0,00,00,00,C0,00,C0,00,00,00,00,00,00,00,
00,00,00
390 DATA 0F,FC,00,0C,00,30,00,C0,03,00,0C,00,0F,FC,00,00,00,00,00,00,00,
00,00,00
391 DATA 3F,FC,3C,00,3C,00,3C,00,3C,00,3C,00,3F,FC,00,00,00,00,00,00,00,
00,00,00
392 DATA 00,00,30,03,0C,00,03,00,00,C0,00,30,00,0C,00,00,00,00,00,00,00,
00,00,00
393 DATA 0F,FC,00,3C,00,3C,00,3C,00,3C,00,3C,0F,FC,00,00,00,00,00,00,00,
00,00,00
394 DATA 00,C0,03,F0,0C,CC,00,C0,00,C0,00,C0,00,C0,00,00,00,00,00,00,00,
00,00,00
395 DATA 00,00,03,00,0C,00,3F,FC,0C,00,03,00,00,00,00,00,00,00,00,00,00,
00,00,00
396 DATA 03,00,03,00,03,00,03,00,30,30,0F,C0,00,00,00,00,00,00,00,00,00,
0C,00,00
397 DATA 00,00,00,00,03,C0,0C,30,0C,30,0C,30,03,CC,00,00,00,00,00,00,00,
00,00,00
398 DATA 0C,00,0C,00,0F,C0,0C,30,0C,30,0C,30,0F,C0,00,00,00,00,00,00,00,
00,00,00
399 DATA 00,00,00,00,03,C0,0C,30,0C,00,0C,30,03,C0,00,00,00,00,00,00,00,
00,00,00
400 DATA 00,30,00,30,03,F0,0C,30,0C,30,0C,30,03,F0,00,00,00,00,00,00,00,
00,00,00
401 DATA 00,00,00,00,03,C0,0C,30,0F,C0,0C,00,03,C0,00,00,00,00,00,00,00,
00,00,00
402 DATA 00,F0,0C,30,0C,00,0F,C0,0C,00,0C,00,0C,00,00,00,00,00,00,00,00,
00,00,00
403 DATA 00,00,00,00,03,F0,0C,30,0C,30,03,F0,00,30,00,30,0C,30,03,C0,00,
00,00,00
404 DATA 0C,00,0C,00,0F,C0,0C,30,0C,30,0C,30,0C,30,00,00,00,00,00,00,00,
00,00,00
405 DATA 00,00,03,00,00,00,03,00,03,00,03,00,03,00,00,00,00,00,00,00,00,
00,00,00
406 DATA 00,00,00,30,00,00,00,30,00,30,00,30,00,30,00,30,00,30,0C,30,03,
C0,00,00
407 DATA 0C,00,0C,00,0C,30,0C,C0,0F,00,0C,C0,0C,30,00,00,00,00,00,00,00,
00,00,00
408 DATA 0C,00,0C,00,0C,00,0C,00,0C,00,0C,00,0F,00,00,00,00,00,00,00,00,
00,00,00
409 DATA 00,00,00,00,0F,3C,30,C3,30,C3,30,C3,30,C3,00,00,00,00,00,00,00,
00,00,00
410 DATA 00,00,00,00,0F,C0,0C,30,0C,30,0C,30,0C,30,00,00,00,00,00,00,00,
00,00,00
411 DATA 00,00,00,00,03,C0,0C,30,0C,30,0C,30,03,C0,00,00,00,00,00,00,00,
00,00,00
412 DATA 00,00,00,00,03,C0,0C,30,0C,30,0C,30,0F,C0,0C,00,0C,00,0C,00,0C,
00,00,00
413 DATA 00,00,00,00,03,C0,0C,30,0C,30,0C,30,03,F0,00,30,00,30,00,3C,00,
30,00,00
414 DATA 00,00,00,00,03,C0,0C,30,0C,00,0C,00,0C,00,00,00,00,00,00,00,00,
00,00,00
415 DATA 00,00,00,00,03,C0,0C,30,03,C0,0C,30,03,C0,00,00,00,00,00,00,00,
00,00,00
416 DATA 0C,00,0C,00,0F,C0,0C,00,0C,00,0C,30,03,C0,00,00,00,00,00,00,00,
00,0C,00
417 DATA 00,00,00,00,0C,30,0C,30,0C,30,0C,30,03,CC,00,00,00,00,00,00,00,
00,00,00
418 DATA 00,00,00,00,0C,30,0C,30,0C,30,0C,30,03,C0,00,00,00,00,00,00,00,
00,00,00
419 DATA 00,00,00,00,30,C3,30,C3,30,C3,30,C3,0F,3C,00,00,00,00,00,00,00,
00,00,00
420 DATA 00,00,00,00,0C,30,0C,30,03,C0,0C,30,0C,30,00,00,00,00,00,00,00,
00,00,00
421 DATA 00,00,00,00,0C,30,0C,30,0C,30,0C,30,03,F0,00,30,00,30,0C,30,03,
C0,00,00
422 DATA 00,00,00,00,0F,F0,00,30,00,C0,03,00,0F,F0,00,00,00,00,00,00,00,
00,00,00
423 DATA **
```

```
100 ' LISTING 6
110 '
120 'Prints out the full character set.
130 '
140 CLEAR 200,&H728F
150 DEFUSR0=&H7E20
160 PMODE3:PCLS:SCREEN1,0
170 X=0:Y=2
180 FOR A=32 TO 122
190 A$=CHR$(A)
200 GOSUB 230
210 NEXT
220 GOTO 220
230 A$=A$+CHR$(13)
240 POKE &H7E22,X:POKE &H7E23,Y
250 N=USR0(VARPTR(A$))
260 X=X+1:IF X>15 THEN X=0:Y=Y+1
270 A$="":RETURN
```



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The electronic banker

*This week, Banker, a program taken from **David Lawrence's** new book on the C16*

The object of this program is to allow the user to keep a clear and continuously updated record of a single bank account, the names of payments, their date and the amount, including the ability to specify not only single payments, but recurring expenses or receipts, no matter how irregular the period. The program is designed to deal with an account for the period of one calendar year, though if a great many transactions are involved, limitations of memory may mean that you will need to start afresh with a new record every few months

Program Notes

Line 10060: The array A$ will be used to store the names of payments and special string explained later, which records the months in which the particular payment is made. The numerical array A will store the amount of each payment and the day of the month on which it is made. The setting of A(0,1) to 999, an impossible day of the month, is used by the later sorting routine to detect the end of the file.

Lines 10080–10130. This loop reads the names of the months of the year into the array MO$

Lines 11000–11200: Standard menu module

Lines 12030 and 12260: The overall loop which allows the user to confirm or reject the information input

Line 12060: The program clearly needs to know whether the item is to be paid out or received, debit or credit. This is recorded in the form of the variable CD (Credit/Debit)

Lines 12090–12220: The months in which the payment is to be made are input in the form of a string of two digit numbers, with no separation between them. The *For* loop beginning at line 12130 scans the string input to make sure that it does yield a series of sensible month values and informs the user if an error has been made

Line 12220: At this point, the information input has been checked and confirmed by the user, so the variable recording the number of items in the file, PA, is incremented by one.

Lines 12290–12360: The purpose of this loop is to place the new item into correct day order within the file. Rather than make duplicate copies of payments which fall in more than one month, the system adopted is to store all of the entries once only, in day order. When inserting the new item, the loop from 12290 to 12350 starts with the highest day value (which is the dummy 999 inserted in the initialisation module) and works its way down until it finds a payment with a day value *less than* the value of S, the day value of the item just input by the user. If it does *not* find the correct position it moves the item it has just examined up one place, in other words, as it scans down the file, moving a spare line with it. When the correct position is found, the spare line is already in the correct position. As a final action, the value of J which records the position of the first entry found which has a day of payment less than S, is increased by one to point to the spare line

Lines 12370–12410: The next task is to translate the list of months input into a format which can easily be scanned by later parts of the program. The simple expedient adopted is to use a string of 12 zeros, recording months in which the payment is *not* to be made, and then to use a loop to change a zero to one, for any months in

```
                    august
   balance c/f:  456.00

   1    salary                323.00   789.00
   1    mortgage              225.00   564.00
  15    gas                   150.00   414.00

   any key to continue:

10000 REM********************************
10010 REM VARIABLES
10020 REM********************************
10030 SCNCLR
10040 DO WHILE IN=0
10050 IN=1 : CR$=CHR$(13) : S$="♥♥♥♥♥♥"
10060 DIM A$(99,1),A(99,1):A(0,1)=999
10070 RESTORE
10080 DIM MO$(11)
10090 FOR I=0 TO 11
10100 READ A$:MO$(I)=A$
10110 NEXT I
10120 DATA JANUARY,FEBRUARY,MARCH,APRIL,MAY,J
UNE,JULY,AUGUST,SEPTEMBER,OCTOBER
10130 DATA NOVEMBER,DECEMBER
10140 INPUT "DO♥YOU♥WISH♥TO♥LOAD♥FROM♥DISK♥(Y
/N):";Q$
10150 IF Q$="Y" THEN GOSUB 15150
10160 LOOP
11000 REM********************************
11010 REM MENU
11020 REM********************************
11030 Z=0 : DO UNTIL Z=5
11040 COLOR 0,8 : SCNCLR : CHAR,16,1,"
[RVS ON][RED]BANKER[GRN]" : PRINT
11050 PRINT "[CD][CD][BLK]♥♥COMMANDS♥AVAILABL
E:"
11060 PRINT "[CD][GRN]♥♥♥♥♥1)NEW♥PAYMENTS"
11070 PRINT "[CD]♥♥♥♥♥2)EXAMINE/DELETE♥PAYMEN
TS"
11080 PRINT "[CD]♥♥♥♥♥3)PRINT♥STATEMENT"
11090 PRINT "[CD]♥♥♥♥♥4)SAVE♥FILE"
11100 PRINT "[CD]♥♥♥♥♥5)STOP"
11110 INPUT "[CD][CD][BLK]♥♥WHICH♥DO♥YOU♥REQU
IRE:";Z:PRINT "";
11120 DO WHILE PA=0 AND (Z=2 OR Z=3)
11130 PRINT "[CD][CD][CD][CD][CD][CR][CR][CR]
[CR][CR][CR]SORRY,♥NO♥DATA♥YET." : GETKEY A$
11140 Z=0
11150 EXIT : LOOP
11160 ON Z GOSUB 12000,13000,14000,15000
11170 LOOP
11180 SCNCLR : CHAR,16,10,"[RVS ON][RED]BANKE
R"
11190 CHAR,10,12,"[RVS OFF][BLK]CLOSED♥FOR♥BU
SINESS"
11200 END
12000 REM********************************
12010 REM ENTER NEW ITEMS
12020 REM********************************
12040 SCNCLR : CHAR,16,1,"[RED][RVS ON]NEW♥IT
EMS[GRN][RVS OFF]" : PRINT
12050 PRINT "[CD][CD]♥♥♥♥♥1)CREDIT":PRINT "♥
♥♥♥♥2)DEBIT"
12060 INPUT "[CD][BLK]♥♥WHICH♥DO♥YOU♥REQUIRE:
";CD:CD=CD-1
12070 INPUT "[CD][CD][GRN]♥NAME♥OF♥PAYMENT:";
O$
12080 INPUT "[CD]♥AMOUNT:";A
12090 EN=1 : DO UNTIL EN=0
12100 EN=0
12110 INPUT "[CD]♥MONTHS♥(E.G.♥010407101):";R$
12120 PRINT "[CU]";
12130 FOR I=1 TO LEN(R$) STEP 2
12140 M=VAL(MID$(R$,I,2))-1
12150 DO UNTIL M=>0 AND M<=11
12160 PRINT : PRINT "[CU]INVALID♥MONTH♥INPUT♥
♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥[CU][CU]"
12170 EN=1
12180 GETKEY A$
12190 EXIT : LOOP
12200 IF EN=0 THEN PRINT MO$(M);"/";
12210 NEXT I
12220 LOOP
12230 PRINT "♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥
♥♥♥♥♥♥♥"
12240 INPUT "[CD]♥DAY♥OF♥PAYMENT:";S
12250 INPUT "[CD][CD][RED]ARE♥THESE♥CORRECT♥(
Y/N):";T$
12260 IF T$<>"Y" THEN RETURN
12270 PA=PA+1
12280 J=PA-1
12290 DO WHILE S<A(J,1)
12300 FOR K=0 TO 1
```



which a payment is to be made. Thus, in the case of our quarterly example above, the eventual string would read 010010010010.

Lines 12420–12450: The new information is placed into the main arrays. If the variable CD records that the item is a debit, the amount is multiplied by minus one, making it negative.

Line 14030: The variable *Sum* will be used to hold the balance in the account — both the balance carried forward and the balance after each item.

Lines 14080–14130: Provided that the statement is not for the first month, in which case there is no balance to be carried forward, these two loops scan the whole of the payments list once for each month which precedes the month of the statement. In this way, each payment is examined to see whether it is made in any of the preceding months, in which case the appropriate amount is added to the total in *Sum* by the end of the two loops. *Sum* contains the full total of any changes in the balance since the beginning of the year.

Lines 14160–14170: One thing to note about the printing of *Sum* at this point is that if the amount is negative, Line 14060 changes the print colour to red. You will find the same techniques used frequently in the lines that follow. Note also the use of the *Print Using* command, allowing us to impose a standard format on the number to be printed and ensuring that the statement will be neatly presented, with all the decimal points aligned.

Lines 14190–14310: This loop scans through the complete list of payments, while the *Do* loop at 14200 and 14300 selects only those which have a 1 in the relevant position of the string recording the months in which the payment is to be made. When a payment is to be made in the month specified for the statement, the loop prints out the day A(I,1) the name A$(I,0), the amount, A(I,0), and finally the balance the payment produces, obtained by adding the amount to the previous total in *Sum*. The screen is maintained in orderly columns, despite the fact that figures may vary in length, by the use of *Tab* which starts items at a standard position on the screen, and *Print Using*.

Lines 15000–15260: Data Files routine. The program is disc based, but can be converted to tape filing by changing Line 15090 to *Open 1,1,1,FI$* and Line 15210 to *Open 1,1,0,FI$*, then 15080 to *FI$ = FI$+",S,W"*. This program is an edited abstract from *The Working Commodore C16* by David Lawrence (published by Sunshine Books at £6·95). Greater detail of the program itself and the principles it embodies can be found within its pages.

```
12310 A$(J+1,K)=A$(J,K)
12320 A(J+1,K)=A(J,K)
12330 NEXT K
12340 J=J-1 : IF J<0 THEN EXIT
12350 LOOP
12360 J=J+1
12370 A$(J,1)="000000000000"
12380 FOR I=1 TO LEN(R$) STEP 2
12390 M=VAL(MID$(R$,I,2))
12400 A$(J,1)=LEFT$(A$(J,1),M-1)+"1"+RIGHT$(A
$(J,1),12-M)
12410 NEXT I
12420 A$(J,0)=Q$
12430 A(J,0)=Q
12440 A(J,1)=D
12450 IF CD=1 THEN A(J,0)=A(J,0)*-1
12460 RETURN
13000 REM**********************************
13010 REM EXAMINE DELETE ITEMS
13020 REM**********************************
13030 FOR I=0 TO PA-1
13040 COLOR 1,1 : SCNCLR
13050 PRINT "[CD]PAYMENT:";A$(I,0)
13060 PRINT "[CD]AMOUNT:";A(I,0)
13070 PRINT "[CD]MONTHS:";
13080 FOR J=1 TO 12
13090 IF MID$(A$(I,1),J,1)="1" THEN PRINT MO$
(J-1);"/";
13100 NEXT J : PRINT
13110 PRINT "[CD]DAY▼OF▼PAYMENT:";A(I,1)
13120 PRINT "[CD][CD][CD][RED][RVS ON]COMMAND
S▼AVAILABLE:[RVS OFF][BLU]"
13130 PRINT "[CD][RVS ON]RETURN[RVS OFF]▼-▼NE
XT▼ITEM";
13140 PRINT "[RVS ON]ZZZ[RVS OFF]▼▼▼▼▼-▼QUIT"
13150 PRINT "[RVS ON]ZERO[RVS OFF]▼▼▼▼-▼DELET
E▼ITEM"
13160 Q$="" : INPUT "[CD][ORN]WHICH▼DO▼YOU▼RE
QUIRE:";Q$
13170 DO WHILE Q$="0"
13180 FOR J=I TO PA-1
13190 FOR K=0 TO 1
13200 A$(J,K)=A$(J+1,K) : A(J,K)=A(J+1,K)
13210 NEXT K,J
13220 PA=PA-1
13230 EXIT : LOOP
13240 IF Q$="" THEN NEXT I
13250 RETURN
14000 REM**********************************
14010 REM COMPILE STATEMENT
14020 REM**********************************
14030 SUM=0
14040 SCNCLR : CHAR,15,1,"[RED]STATEMENT[BLK]
" : PRINT
14050 Q=0 : DO UNTIL Q>0 AND Q<13
14060 INPUT "[CD]NUMBER▼OF▼MONTH▼FOR▼STATEMEN
T:";Q
14070 LOOP
14080 DO WHILE Q<>1
14090 FOR J=1 TO Q-1
14100 FOR I=0 TO PA-1
14110 IF MID$(A$(I,1),J,1)="1" THEN SUM=SUM+A
(I,0)
14120 NEXT I,J
14130 EXIT : LOOP
14140 SCNCLR : CHAR,15,1,"[RED]" : PRINT MO$(
Q-1)
14150 PRINT "[CD][BLK]BALANCE▼C/F:▼";
14160 IF SUM<0 THEN PRINT "[RED]";
14170 PRINT USING "####.##";ABS(SUM)
14180 CHAR,26,3,"[CRN][RVS ON]ITEM[CR][CR]
[CR]TOTAL[RVS OFF]" : PRINT "[CD]"
14190 FOR I=0 TO PA-1
14200 DO WHILE MID$(A$(I,1),Q,1)="1"
14210 PRINT "[BLK]" : PRINT USING "##";A(I,1
); : PRINT "▼▼▼▼";
14220 IF A(I,0)<0 THEN PRINT "[RED]";
14230 PRINT LEFT$(A$(I,0),15);
14240 PRINT TAB(23);
14250 PRINT USING "####.##";ABS(A(I,0));
14260 SUM=SUM+A(I,0)
14270 PRINT "▼[BLK]";
14280 IF SUM<0 THEN PRINT "[RED]";
14290 PRINT USING "####.##";ABS(SUM)
14300 EXIT : LOOP
14310 NEXT I
14320 PRINT "[CD]ANY▼KEY▼TO▼CONTINUE:"
14330 GETKEY A$
14340 RETURN
15000 REM**********************************
15010 REM DATA FILES
15020 REM**********************************
15030 O$="" : DO UNTIL O$="Y"
15040 INPUT "[CD]NAME▼OF▼FILE▼TO▼BE▼SAVED:";F
I$
15050 PRINT "[CD]FILE▼TO▼BE▼SAVED▼IS▼"FI$
15060 INPUT "[CD]IS▼THIS▼CORRECT▼(Y/N):";O$
15070 LOOP
15080 FI$="@0:"+FI$+",S,W"
15090 OPEN 1,8,2,FI$
15100 PRINT#1,PA
15110 FOR I=0 TO PA-1
15120 PRINT#1,A$(I,0);CR$;A$(I,1);CR$;A(I,0);
CR$;A(I,1)
15130 NEXT I
15140 CLOSE1 : RETURN
15150 O$="" : DO UNTIL O$="Y"
15160 INPUT "[CD]NAME▼OF▼FILE▼TO▼BE▼LOADED:";
FI$
15170 PRINT "[CD]FILE▼TO▼BE▼LOADED▼IS▼"FI$
15180 INPUT "[CD]IS▼THIS▼CORRECT▼(Y/N):";O$
15190 LOOP
15200 FI$=FI$+",S,R"
15210 OPEN 1,8,2,FI$
15220 INPUT#1,PA
15230 FOR I=0 TO PA-1:INPUT#1,A$(I,0),A$(I,1)
,A(I,0),A(I,1):NEXT
15240 A(PA,1)=999
15250 CLOSE1
15260 RETURN
```



AUTOMATA [illegible] DEUS EX MACHINA [illegible] THANK YOU!

(Barry Norman, Radio 4)
[illegible]

(Popular Computing Weekly)
[illegible]

(Dave Freeman, Radio 1)
[illegible]

(Computer & Video Games)
[illegible] The Wall.

(Thorn EMI)
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(Crash Magazine)
[illegible]

(Home Computing Weekly)
[illegible]

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Open Forum

We are always actively seeking programs for publication — either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation — usually not more than 1000 words — should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Colour Demo

on Amstrad

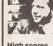
The Amstrad CPC464 supports the use of text and graphics windowing very well.

Here is a very primitive implementation of same and the listing is therefore short. However it does some justice to the power and versatility of the on board language.

```
[illegible]
```

Colour Demo
by D Race

Arcade Avenue



High scores

This week some general letters and I was pleased to hear again from the mysterious Ensor from "somewhere in England" (who is that masked man?) whose best at *Full Throttle* is first place on four laps of Silverstone by 32 40 seconds. "I find it helpful to write down the corners so that I know what's coming up and get into the right place eg Silverstone R-L-R-L-R-R-L-R. A different sign can be included to indicate whether it needs the use of brakes. I am now concentrating on the Donning ton circuit, but so far I have only come seventh.

"In TLL the highest number of targets I've managed to destroy is 40 with a score of 30732, although I have a higher score of 20928 for 38 targets. It can be a frustrating game as the targets become extremely difficult to destroy the further you get into the game. Does anyone know how many there are?"

Anthony Rowstron of Harpendon has a high score of 188 440 on Level 13 of *Zzoom* which has been witnessed and verified by his mum which puts it beyond question. No decadent cheating in their household!

A Taylor of St Helens has stopped the express on Sinclair's game with a score of 5910 but has been pipped by either S Moran and N Dunbar of Newport one of whom writes "I have completed Stage One of *Stop the Express* and finished with a score of 6450. My highest score on *Sabre Wulf* is 222,378 and 93%". I suspect the latter score may have been achieved using their infinite lives poke but they don't say.

M Taylor of R.A.F. Kinloss asks for help getting through the flashing gate after completing the Processing Plant screen of *Manic Miner*. It is a long while since I have had time to play this game, but as I remember it you have to stand on the ledge on the left of the gate and edge your foot over as far as it will go before jumping.

Finally this week comes a letter from some people trying to put me and Tony Bridge out of business. "We are creating a service that is directed to arcade (and adventure) fans everywhere. It will provide hints, tips, maps and infinite lives codes. Already we have got maps for *Sabre Wulf* and *Atic Atac*, as well as *Moon Alert*, Tranz AM, JSW, Manic Miner, the Horace series, *Lunar Jetman* and many more. We will publish a newsletter every two months that will contain loads of information for the members. People will be able to have a say as well as publish their own tips and scores. We will have prizes for the best scores such as new games and pop videos, etc. Subscription is £3 50 (incl p&p) for the first year or 70p for the first newsletter and details of how to join."

If you are interested the address is I.A. Robinson, 38 Western Avenue, Prudhoe, Northumberland.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to: Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD

Open Forum

Timer on Dragon

Your eyes flash repeatedly from keyboard to screen and back. Time flies by unnoticed as the data gradually fits into place. At last, there's the answer! Then the aftermath strikes. You have missed the train home, the shops are shut and your dinner is burnt to a crisp.

Don't despair, here is the answer to your troubles. The routine below presents a clock display apparently running simultaneously with the main program.

For your own use, enter all units except the demonstration text, then liberally scatter *Gosub 350* throughout the main program. Precise spacing of the *Gosub* statements is not required since the clock is self-correcting. Machine code clear routines are provided, but remember to use *Print@* for the top line of your main display and to avoid scrolling.

The timer check in *Line 350* may require slight alteration depending on the exact pulse rate of your Dragon.

Program notes

130-140	Save space and read machine code
180-270	Input time from keyboard
310-330	Divide screen
340	Clear clock screen and zero timer
350	Check for a minute to pass
360-410	Format clock display
450	Clear main screen
460-570	Main demonstration program
610-670	Machine code screen clear

```
10 ****************
20 *  24HOUR CLOCK  *
30 *   TO INCLUDE   *
40 *  IN YOUR PROG  *
50 *      ---       *
60 *   WRITTEN BY   *
70 *  BRIAN HATTON  *
80 *    (C) 1983    *
90 ****************
100 ************
110 * INITIALISE *
120 ************
[illegible] 2500
[illegible] GOSUB [illegible]
[illegible]
[illegible] SETTING *
[illegible]
[illegible]
[illegible] PRINT [illegible]
[illegible]
[illegible] IF [illegible] THEN
[illegible] GOTO [illegible]
[illegible] IF [illegible]
[illegible]
[illegible] THEN [illegible]
[illegible]
[illegible] THEN M=VAL(M$
[illegible]
[illegible] THEN [illegible]
[illegible]
[illegible] THEN [illegible]
[illegible]
[illegible] THEN [illegible]
[illegible]
[illegible] GOTO [illegible]
[illegible]
290 * DISPLAY *
300 ***********
310 FOR J=32 TO 63
320 PRINT@J CHR$(131)
330 NEXT J
340 EXEC &H7E75 TIMER=0
350 IF TIMER <3000 THEN [illegible]
360 IF VAL(M$)=60 THEN [illegible]
370 IF LEN(M$)<3 THEN [illegible]
380 IF LEN(H$)<3 THEN [illegible]
390 IF VAL(H$)=24 THEN H$="00"
400 PRINT@13 H$ ":" RIGHT$(M$,2)
410 RETURN
420 *********
430 * DEMO *
440 *********
450 EXEC &H7F00
460 PRINT@160,"demonstration"
470 PRINT@170,"***********"
480 PRINT@224,"THIS PROGRAM DEMONSTRATES THE [illegible] OF A CLOCK SUBROUTINE IN GAMES ETC. THERE IS NO LONGER ANY LIKELIHOOD OF MISSING THOSE APPOINTMENTS "
490 PRINT@457,"press space bar"
500 I$=INKEY$ IF I$="" THEN GOSUB 350:GOTO 500
510 IF I$=CHR$(32) THEN
520 ELSE 500
530 EXEC &H7F00 PRINT@128 " THE TWO PARTS OF THE PROGRAM HAVE THEIR OWN MACHINE CODE SCREEN-CLEARING ROUTINES "
540 PRINT@256 "IN ADDITION THE CLOCK HAS A SIMPLE SELF-CORRECTING ERROR MEASUREMENT "
550 PRINT@352 "AS A RESULT A REDUCED NUMBER OF TIMER CHECKS IS REQUIRED "
560 PRINT@457,"press space bar"
560 I$=INKEY$ IF I$="" THEN GOSUB 350 GOTO 560
570 IF I$=CHR$(32) THEN
580 ELSE 560
590 *********
590 * CLEAR *
600 *********
610 FOR K=1 TO [illegible]
620 READ A$
630 POKE 32500+K VAL("&H"+A$)
640 NEXT K
650 DATA 86 80 8E,04 00 A7 80 [illegible] 04 20 26,F9 39
660 DATA 86 [illegible] 8E 04,00, A7 [illegible] 8C 06 00 26 F9 39
670 RETURN
```

Timer
by B Hatton

Microradio

GW6JJN

Portable Stations

Some months ago, Microradio discussed the advantages of portable computers in amateur radio, particularly for competitive applications as well as the convenience of a small but efficient machine in the shack. At that time I reviewed the Tandy Model 100. Following this, many Tandy owners wrote to the column asking how best you might use your machines to communicate with other radio enthusiasts.

Down in the depths of Brighton is the office of John Noyce who runs the user group for portable computers: the "Kyocera User Group". Let me explain that the name Kyocera comes from the name of the factory in Japan where these machines are made.

The most recent copy of the newsletter, which John has sent me, includes an extensive article by P J Turner, a radio amateur from Suffolk, about the Trs80 Model 100 and its applications for Amateur Radio using AMTOR. The article is well populated by photographs and diagrams and describes using the AMT-1 Amtor Terminal.

The AMT-1 unit takes in the RS232c output from the Model 100 and converts the signal to AMTOR (Amateur Teleprinting Over Radio). AMTOR is so efficient a mode that even a low powered portable station can make extensive contacts.

The Kyocera User Group can be contacted by sending a stamped addressed envelop to: John Noyce, PO BOX 450, Brighton, East Sussex, BN1 8GR.

When the column recently described the making of a do it yourself interface for the Sinclair Spectrum, there were many readers who wrote in to say that they wanted to hear more about actually getting down to printed circuit level and making something. I suppose the best thing would be a really powerful computer. Then you could install whatever interfacing for radio that you wanted. At the same time, why not go the whole hog and make the biggest selling, most versatile machine around — the IBM PC, well a compatible at least.

What I am leading up to is the fact that there is a company in the Midlands called Delvex who offer the boards for sale, along with components and all the help needed for the do-it-yourself hacker. Delvex can be reached on 0527 27816.

Ray Berry

Open Forum

Sound Editor

on QL

This is a program for the Commodore 1520 printer/plotter

The program will generate a calendar for any year later than 1752 because on September 14 of that year the present calendar was adopted, which means that the calculi within the program would produce a Gregorian response to a Julian calculation

The program only uses three character sizes: 20 cpl, 40 cpl and 80 cpl, which it uses for (in order of sequence) printing a heading – "Year calendar", printing the month and the day/date

Program Notes

Variables

M$(12)	= Month eg March.
M(12)	= Number of days in the month M$ eg 31
D$(7)	= Days of the week eg Mon, Tue etc.
I	= Counter
L	= Counter eg as above
V	= Day counter — tells the computer what day the next date falls on eg mon 23
Z	= Print space counter
T	Counter for days in the month eg counts up to M(12)
A$	= String value of T
Y	= Year
A	Numerical variable used in calculating what day the first of January falls on

Lines

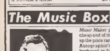
500-605	= Input the year and decides what day the year begins on.
3-5	= Open 4 of the printer channels. CHR size colour draw and print
6-8	= Prints a calendar heading
9&31	= Draw a line from one side to the other
10	Sets up dimensions of arrays
20	= Inputs name of month (I) and the number of days.
30-110	= Prints the calendar.
50-95	Decides which column the next date goes in (eg Mon)
200-210	= Data — month & number of days in it.
220	= Data — days of the week.
299	Prints a line to divide the two columns.
300	= End of program.
310-400	= Adds an extra character to make two characters in the date
480-495	= Print an introductory page
61	Starts the program.

Poke 36879,8 colours the screen black — this is the only item in the program which needs to be altered to make it compatible with he Commodore 64 with a 1520

```
1 GOTO480
2 OPEN1 ... : OPEN2,6,2
5 OPEN3 6 3:PRINT#... 0:OPEN4 6 0
6 PRINT#2 3
7 PRINT#3 2:PRINT#4       ";CALENDER";
 PRINT#5 1 PRINT#4 PRINT#2,1
8 PRINT#4,        300IN
NOTES  PRINT#3 0: PRINT#4
9 PRINT#1  "D" 480 0
10 DIMM$(12) M(12) D$(7)
20 FORI=1TO12 READM$(I) M(I) NEXTI:
FORI=0TO6 READD$(I):NEXTI
30 FORI=1TO12:PRINT#4
31 PRINT#1  D  480,0:PRINT#0,0
35 PRINT#2 2:PRINT#3 1
40 PRINT#4:PRINT#4
 M$(I) PRINT#3 0:PRINT#4
45 PRINT#2 3
50 FORL=0TO6 PRINT#4 D$(L)          NEXTL PRINT#4
51 PRINT#2 0
58 IFA=0THENK=0:GOTO90
60 IFV<>0THENK=V:GOTO400
65 FORT=1TOM(I)
70 IFV=7THENV 0 PRINT#4
80 GOTO310
90 PRINT#4 A$;
95 V=V+1 NEXTT
110 NEXTI
200 DATAJANUARY 31 FEBRUARY,28 MARCH,31 APRIL
30,MAY,31  JUNE 30,JULY 31 AUGUST,3
210 DATASEPTEMBER,30,OCTOBER,31,NOVEMBER
30,DECEMBER 31
220 DATASUN MON TUE WED,THU,FRI SAT
299 PRINT#1  D" 479,0:PRINT#1, 9" 479 990
PRINT#4 PRINT#1  M" 430,0:PRINT#1  D"
479,250
300 END
310 IFT<10THENA$=STR$(T)+    GOTO80
320 A$=STR$(T):GOTO90
400 A$=      PRINT#4 A$;
405 IFZ=1THEN80
410 Z=Z-1:GOTO400
480 POKE36879 8 PRINT "*****************************
CALENDER CALCULATOR*************
****"
481 PRINT ******"
490 PRINT"NOTE THIS ONLY WORKS IN CONJUNCTION
WITH THE COMMODORE 1520 PRINTER
491 PRINT"_PLEASE NOTE THAT THE PROGRAM WILL
NOT WORK FOR ANY YEARS PRIOR TO
492 PRINT "HE YEAR 1752  AS THEY USED
ANOTHER CALENDER THEN
495 PRINT
500 INPUT WHICH YEAR" Y:IFY<1753THENRUN
510 A=INT Y/100)
520 A=A*100 A=Y-A
530 A=A+INT(A/4)
540 A=A+2:IFY/4=INT(Y/4)THENA=A+1
550 A=A-INT(A/7)
560 A=A-1
570 IFY>2000THENA=A-1
580 IFY<1800THENA=A+2
590 V=A
600 IFA>0THENV=A-1:GOTO600
601 IFA=0THENA=0
602 IFA<0THENV=A+6
605 V=0
610 GOTO3
```

Sound Editor
by Andrew Fuller

The Music Box



Tone Control

First, a correction. the new MIDI compatible Casio keyboard mentioned a couple of weeks ago is the CZ-101, not the CT 101 — and very impressive it looks, too Casio is bringing out a whole new range of keyboards, all of which look inviting The CZ-101 is the one that's most likely to interest computer users It will retail at £306 and should be available from January

Simple keyboard add-ons to computers are becoming increasingly available. There's Commodore's own clip-on device for the 64 (part of the £30 *Music Maker* package) at the cheap end of the scale Further up the price range, you can buy Autographic's *Microsound* keyboard or Siel's CMK 49 for the Commodore (both with software and priced between £125 and £150) and LVL's *Echo 1* for the BBC Model B or the 64 at around £100

As far as the BBC is concerned, its biggest failing is sound quality This is partly due to the use of 76489 sound generator — a situation which can't be improved — and partly due to the woefully inadequate on-board audio output circuitry. LVL has had the canny idea of marketing an external amplifier for both the BBC and the 64 (the *Echosound*). Those of you who don't want to fork out £50 for one of these purpose built devices can quite easily wire up their computers to their own hi-fi sets, PL16 and any of the 0 volts pins on the BBC's 1 MHz bus will give you an audio output signal which can be fed into the tape input on your amplifier On the 64, audio output is provided on pins 2 and 3 of the 8-pin audio/video DIN socket on the back of the computer Both these outputs are useful for recording your music but, in the BBC's case, you can also improve the sound no end by a little judicious use of tone controls or filters

This point about the BBC has been made — to me anyway — most forcefully by Doug Tate who runs the one-man Musicsoft show at 12 Fallowfield, Ampthill, Beds (0525 402701) Doug has produced a suite of music programs for the Beeb which is designed for everything from amusement, through teaching, up to high quality synthesis The most sophisticated program (The Synth — for OS 1 0 up) retails at £8 75, while the others, offering a range of facilities and amusements, sell for £5 75 each. I can heartily recommend them all. Please send Doug an SAE for further details

Ranged against him — although not entirely in competition — is the rather larger concern of Island Records, whose software division (Island Logic) have just released their first product (for the BBC), ambitiously titled *The Music System*. TMS is really designed for professional composition (including, as it does a music print-out facility) It retails at £24 95 on disc or at a total of £25 90 on two cassettes I can say right now that the packaging, the features on offer and — most of all — the graphics are superb

Gary Herman.

The Music Box is a new weekly column with news, reviews and readers comments on all aspects of micros and music

Any readers with experience of computer music making or companies with new product news are invited to write to drop a line explaining what they're doing to Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD


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Calendar

on Vic-20

This is a program for the Sinclair QL computer. It allows the user to experiment with the *Beep* command which is not very well documented in the user guide. To use the program the user must press one of the number keys which matches the selected option. Once this is done they must enter the new value, followed by enter.

```
100 MODE 4 : k=0
110 CLS 0
120 PAPER 3
130 :
140 time=10000
150 pitch1=0
160 pitch2=0
170 xgrad =0
180 ygrad =0
190 wrap  =0
200 fuzzy =0
210 rand  =0
220 CLS
230 INK 7:AT 2,0:PRINT "Sound Editor"
240 PRINT "----- ------"
250 PRINT
260 AT 5,0:ffill:AT 5,0
270 INK 7
280 PRINT "BEEP ";time;",";pitch1;",";pitch2;",
";xgrad;",";ygrad;",";wrap;",";
    fuzzy;",";rand
290 PRINT:PRINT
300 PRINT "1-Time     :";time
310 PRINT "2-Pitch1   :";pitch1
320 PRINT "3-Pitch2   :";pitch2
330 PRINT "4-Xgrad    :";xgrad
340 PRINT "5-Ygrad    :";ygrad
350 PRINT "6-Wrap     :";wrap
360 PRINT "7-Fuzzy    :";fuzzy
370 PRINT "8-Random  :";rand
380 PRINT "9-Play"
390 a$=INKEY$(-1)
400 IF a$="1" THEN AT 8,0:ffill:AT 8,0:INPUT"
Time    :";time:k=1
410 IF a$="2" THEN AT 9,0:ffill:AT 9,0:INPUT"
Pitch1  :";pitch1:k=1
420 IF a$="3" THEN AT 10,0:ffill:AT 10,0:INPUT"
Pitch2  :";pitch2:k=1
430 If a$="4" THEN AT 11,0:ffill:AT 11,0:INPUT"
Xgrad   :";xgrad:k=1
440 IF a$="5" THEN AT 12,0:ffill:AT 12,0:INPUT"
Ygrad   :";ygrad:k=1
450 IF a$="6" THEN AT13 ,0:ffill:AT 13,0
:INPUT"  Wrap    :";wrap:k=1
460 IF a$="7" THEN AT 14,0:ffill:AT 14,0
:INPUT"  Fuzzy   :";fuzzy:k=1
470 IF a$="8" THEN AT 15,0:ffill:AT 15,0
:INPUT"  Random  :";rand:k=1
480 IF a$="9" THEN k=1
490 IF k=1 THEN k=0:BEEP time,pitch1,pitch2
,xgrad,ygrad,wrap,fuzzy,rand
500 GO TO 230
510 DEFine PROCedure ffill
520 INK 0
530 PRINT FILLS(" ",39);
540 END DEFine
```

Calendar
by R Sage

Book Ends

Books *Spectrum Supergames; The Atmos Book of Games; The QL Book of Games* **Prices** £5.95, £5.95, £6.95 (QL) **Micros** Spectrum, Oric Atmos, Sinclair QL **Supplier** Micro Press, Castle House, 27 London Road, Tunbridge Wells, Kent

Despite their attractive glossy covers we have here three books of Basic listings for the Spectrum, QL and Oric Atmos, each costing approximately the price of a good machine-code game.

The types of game offered are fairly standard — a card game, an educational game, an adventure etc. However, all three publications bow to the idea that typing in listings teaches programming by including notes on technique. This at least could raise them above some of their opposition.

There may be some argument for games listings for the QL, which lacks software and has a fast Basic, but the Spectrum is so well supplied that books like this enter a market which is already glutted.

John Minson

Book Computer Bits and Pieces **Price** £3.95 **Micro** Any **Supplier** Penguin Books, Harmondsworth, Middlesex.

In the period before Christmas many 'nothing' books get published such as 'How to be a Wally' or '1001 Computer Facts'. This book belongs to the latter category, though commit them all to memory and you could well belong to the former!

The problem with it is that it contains nothing but data with no indication of how to use it. The result is an information overload as indigestible as too much Christmas pudding.

Many of the facts are superficially fascinating, in particular those on microchips and warfare, however the lack of supporting context devalues them. There is no indication of the controversy surrounding certain facts such as the discovery of the 'ultimate' prime number, either.

A trivial exercise, though parts could still set you thinking.

John Minson

Book Writing Software for Profit **Price** £4.95 **Micro** Any **Supplier** Virgin Books, 61-63 Portobello Road, London W11 3DD

It's probably the dream of every programmer to sell his or her work and retire to a tropical tax haven.

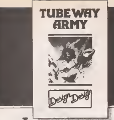
AJ Harding's book won't help you develop your computing skills, but it does indicate some of the pitfalls along the road to fame and fortune.

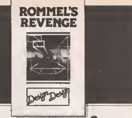
It takes the potential millionaire from choice of computer, through types of software, business, utility or games, to copyright, contracts and tax.

Mr Harding runs the Molimerx publishing company and knows the industry well, but his book suffers from being too much of an informal chat with too few specifics; an index would have been valuable as well.

But if you can provide the talent, this book could help to point you in the right direction.

John Minson





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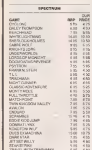
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Tony Bridge's Adventure Corner



Sweet dreaming

While *The Quill* prompted a huge number of adventures to be written for the Spectrum, its release for the Commodore has not, as yet, elicited such a response. This may change now that Codewriter Ltd have taken the package under licence. This company is an American outfit, originally called Dynatech and renamed in honour of its main product, a database called *Codewriter*. Having signed a license agreement with Gilsoft, they are now marketing *The Quill* under the name of *Adventure Writer*. It is available now on disc for the Atari, Apple II and Commodore 64 for £24.95. The program, apparently is exactly the same as the original *Quill* but the manual has been made much more friendly. This is obviously great news for Apple and Atari owners — now they can add their adventures to the flood of Spectrum (and some Commodore) programs. If you fancy yourself as an adventure writer, don't hesitate — you'll find this one of the most useful utilities you own.

It's not, maybe, such good news for Commodore owners, who can obtain the same program (though an outdated manual) from Gilsoft at a mere £15 (cassette) or £20 (disc). It's a pity that Codewriter's advert doesn't mention *The Quill* anywhere, but I'm sure they do in the documentation.

Meanwhile, Gilsoft themselves have just released *The Illustrator*, the follow-up to *The Quill*. Although they have secured an honoured niche for themselves in the Adeventure Hall of Fame with the earlier program, Gilsoft have now gone, I'm told, one better in this new utility. Using it in conjunction with *The Quill*, the intrepid adventure writer can now add graphics to his Quilled adventure. Again, more news as soon as possible.

As far as Quilled adventures on the Commodore go, I have only been sent one! This is from Keith Wadhams, who has written *Problems of Dreaming*. He says that, although he hopes to be able to interest someone in marketing this program for him, he is prepared to supply a copy for £3, including postage and packing to anyone who cares to write him at 122, Melrose Avenue, Wimbledon Park, London SW19.

I passed the tape along to my good friend and fellow adventurer, The Great Wizard, aka Ken Matthews, who had this to say:

"As you can tell from the title, this is about a dream world — the dream world of a young boy (played by you) who, bored with a rainy day and fed up with watching TV and reading papers, finally falls asleep. In his dreams, characters and situations from the newspaper and TV come to life. Eventually he finds himself in a nightmare.

"Keith has obviously taken a great deal of time to develop his ideas and put a lot of thought in to the program. I thought that it might be easy when I found the Bent Pin, needed to pick the shed lock, in the very next location. This is far from the case! Location descriptions are detailed and contain clues to portable items, so close attention is needed at all times. To date, all of the problems have a logical solution and the command analyser has understood a variety of synonyms.

"Overall, then, I'd say that the game is better than many I've seen, and certainly deserves better than being sold for £3."

Level 9 has been busy over the past few months. The new programs are not only up to the usual standard as far as the text is concerned, but now, as I'm sure you'll be aware, also include graphics for the first time. These are executed with Level 9's usual eye for detail, and are small, but, like the Grand Elf, perfectly formed. *Return to Eden* is the sequel to *Snowball* and takes place on the planet Eden, while *Eric the Viking* is based on the book by Terry Jones of *Monty Python*. The substantial package includes several extracts from the book to give a flavour of the original. On-screen both programs look very similar, with a new character set which I found quite difficult to read — but the problems to be found in the adventures are in the best Level 9 tradition, and I'm sure that the Corner will have many letters about these adventures. I'm looking forward to delving further into these games.

Talking of letters, here's one from a miffed *Hareraiser* fan: "*Dear Tony, After reading about Hareraiser in PCW I wonder who these nerds are who think this isn't any good. I am one of a group of six who have had immense fun from seeking clues on this treasure hunt, and furthermore, it's not meant to be like the book* Masquerade. *If one seeks to win the Golden Hare, the computer gives the clues; the rest is down to you — that is, if you're intelligent enough. Yours Mrs J Y Widdowson.*'

These 'nerds', Mrs Widdowson, are those people who have been persuaded that this program is actually an "adventure puzzle". At the top of the ad for the game, in great big letters it says "Win! the famous jewelled Hare of Masquerade" and, though, I'm sure that you've had a lot of fun, Mrs Widdowson, I don't blame anybody else for being disappointed after thinking that that 'puzzle' ought be at least a little closer than a million miles to Masquerade. But that is the final correspondence on the subject — I've had enough already!

And now a final letter, from Scott Kelly of Glasgow. He is stuck in *Old Father Time*, for the BBC. This is from Bug-Byte, and I haven't seen, nor know anything about it. Scott is having trouble right at the start and is a bit embarassed at the whole thing, having had success with other adventures. Confronted with a forest floor covered with leaves, I admit that my first reaction, too would be to move the leaves — how about search or examine the leaves? But I'm sure you've tried this one, contact Scott at 12 Pollock Rd, Bearsden, Glasgow G61 2NJ.

Scott offers reciprocal help with *The Hobbit, Adventureland, Sphinx Adventure, Philosopher's Quest, The Count, Castle of Riddles* and *Colossal Adventure*. As usual, don't forget to enclose a SAE if you want a reply from him.

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further write to Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair — help is at hand.

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Peek & Poke

Quick and reliable

Alexander Lepre of Marsa, Malta, writes:

Q **I am considering the purchase of Digital Research's *Sprint* for the Spectrum, and so I would like to know whether it is really all that it states in the advert**

A I don't know what adverts you have seen, but if they have appeared in British computer magazines, then you can be assured that the machine will do what is claimed. The British Advertising Standards Authority are quick to act against misleading or incorrect adverts.

Also my experience is that the *Sprint* (which is made by Challenge Research by the way), is very quick, and very reliable.

Thesaurus index

C S Ryan of London, writes:

Q **Being an avid crossword fan, I would like to know whether there is a program that I could use to form something like a thesaurus? For example if I type in *Blot*, I would get a list of words such as *Blemish, Soil, Obliterate, Stigma*.**

My computer is a 48K Spectrum with a cassette recorder only, my knowledge of machine code is nil, and my Basic very limited. I am thinking of a dictionary in excess of 5,000 words. Is this type of program impossible on a Spectrum?

A Well let's take a look at the facts. Assuming an average word length of 7 characters, gives us 35 000 characters of Ram needed to store our dictionary. Obviously this is far too much, so you would have to use some form of character compression techniques.

Assuming that on average each word would have 5 alternative words, gives us 25 000 numbers that have to be stored. Again, this is too high a figure.

We are only able to use cassette tape for storage. This means that we cannot realistically manipulate the thesaurus via the cassette. There are no software packages suitable for such a purpose which work with cassette tape (or indeed as far as I know with disc).

I think that the conclusion I reach is that with your self confessed limitations in programming know how that this project is a non-starter. However, if you were able to find a machine code programmer to collaborate with, you might have some chance of success.

Pascal compiler

John Alexander of Bognor Regis writes:

Q **I have two queries regarding the Vic 20 computer. Do you know of any Pascal Compiler, or interpreter for this machine? A cartridge would of course be preferable. Also, can you suggest a supplier of suitable plugs to connect to the User and Games Ports to allow the connection of special peripheral units?**

A If only you had a Commodore 64 John. Since the launch of the 64, the poor Vic has been almost completely neglected as far as software is concerned. It seems to me that with the number of Vic 20's that are still in use that there is a large market that is simply being neglected by the software companies. You may have gathered from this that the answer to your first question is NO. More luck, however, with your second question.

Kentech are suppliers of a large number of interfaces etc, for the Vic (and other machines). They may be able to satisfy your requirements. Their address is: Kentech, St. Oswalds Trading Estate, Gloucester GL1 2SU.

A lost voice

Kevin Edwards of Stoke-on-Trent writes:

Q **I own a Commodore 64 with Simons Basic. As many reader's may agree, the Simons Basic manual is far from being sophisticated, and only outlines the simple commands and uses.**

Recently I have been trying to compose a tune. However, I could not seem to get any voice bar voice one from working, however carefully I followed the instructions.

Could you possibly advise me where I might be going wrong?

A Well, no actually. As you haven't told me what you have done, I cannot tell what, if anything, you've done wrong. I agree, however, with your point about the manual, though.

The Commodore Programmers Referance Guide on the other hand, has an excellent section concerning the SID sound chip, and the way to get the most from it.

This book is available from most good bookshops, and is definitely worth a look.

Two gold stars

D C A Turkhud of Hornsea, North Humberside writes:

Q **In answer to a query in PCW in September you stated a number of difficulties in loading *Vu-File* on to microdrive.**

Using the software *Trans-Express* published by Romantic Robot of 113 Melrose Avenue, London NW2 4LX, I have successfully transferred both *Vu-Calc* and *Vu-File*.

A I have had a number of letters on this subject mostly pointing out that the method of transferring software to microdrive depends on the program.

One software company wrote to me and explained that they had introduced a scheme whereby owners of cassette versions of some of their products could obtain microdrive versions on an exchange (plus £1.50) basis. This company (Picturesque) also pointed out that their attitude had been motivated more by a desire to obtain customer good will than by a desire to generate revenue.

This kind of behaviour in a software company is to be applauded, and I therefore award Picturesque Software two gold stars, and top place in the 'Peek and Poke Hall of Fame'. Not an award that is given lightly.

Picturesque can be contacted at 6 Corkscrew Hill, West Wickham, Kent BR4 9BB.

Statement uutput

Bryan Scott of Hayes, Middlesex writes:

Q **As I have had some trouble recently with Spectrum programs (*Zeus Assembler, Vu-Calc*). I tried the *Print In 16602* statement shown in PCW, Vol 3 No 38 and got the answer 63. As I have an issue 3 computer what does this mean please?**

A Since the appearance of this now legendary method of identifying a Spectrum, I have received numerous letters quoting various numbers that were produced in response to it. 63 is in fact the leader with 126 and 198 close behind. I am at somewhat of a loss to explain this, as my machine continues to output the depressingly consistent value of 191.

As a check, I used my backup method of determining the issue number, which is *Print In 57342*. This produces 191 on issue 3, and 255 on issues 1 and 2 (normally).

I would be interested in hearing from readers who experience any differences with this statement's output as well.

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NEW 48K Spectrum + leads + DK Tronics keyboard joystick + interface Tape Recorder s/w inc Beach Head Decathlon etc £150 Tel Redhill 67335 (Kevin) work no

SPECTRUM 48K Interface 1 + 2 microdrive + 6 cartridges, joystick + interface cassette recorder, s/w and books. £280 Tel Bournemouth 526 424

SPECTRUM 48K + Microdrive + Interface I + Protex switchable joystick interface + s/w inc White Lightning Sabre Wulf Eureka, Sherlock £380+ Sell for £250 Tel Jerry 01-738 0481 W days after 4pm

48 SPECTRUM Interface I Microdrive Kempston joystick Cheetah microspeech magazines + games Sell £275 or swap for BBC B 1 2 Tel 041-638 5425 after 6pm

BUG BYTE Cookbook two cassettes, new unused, boxed, unwanted gift £6 50 Tel 0428-713019

SPECTRUM 48K complete machine code tutor inc For absolute beginner Abersoft Forth Grand Prix Manager Football Manager Worth £43 75 Will swap for Sharp PC1500 or Interface or sell £25 Tel 01-859 2798

SPECTRUM S/W eg Beach Head, Travel with Trashman £3 00 Oneiron, Thrusta Push Off £1 50 Painter £2 00 each Tel 01 573 4044 (area Bos)

ZX SPECTRUM 48K, boxed Kempston joystick cassette recorder £280 of original mags £280 ono Tel Loughborough 231393

48K SPECTRUM Kempston joystick interface Quickshot I joystick tape recorder + much s/w and mags Total value £400 At £225 Tel Milford Haven (Dyfed) (06482) 3163

SPECTRUM S/W for sale, loads of titles ½ price or less (all original) also various magazines for sale Tel 01 849 0225 Ask for Mr Miskin

FOR SALE Spectrum educational originals Postline £3 50 each Geography Paddington shopping Griffin Number fun Look Sharp Count with Oliver Castle of Dreams Sam Safety Phone 01-690 6787 after 7pm

ORIGINAL Spectrum software Ad Astra, Boogaboo Trans Am Punchy Escape from Arkaron Into the Empire 16146 No 6 No 7 only £3 50 each! A Ashton 83 Allcroft Road Birmingham B11 3EF

STACK Light rifle with software + joystick + sound amp + £60 software etc Cost £150 Swap for interface 1 + microdrive or Spectrum Modem or sell £75 Printer wanted Tel 0342 713422 Sussex area.

SPECTRUM software River Raid An-



draiks, Mad Martha, Knights Quest, Zaxxon Rostle of the Cursed Mine. £2 each or £10 this lot Tel AbSen 2477 Will send

48K Spectrum plus Kempston joystick plus games plus books plus magazines. All good condition and boxed Price £150 Tel: Harpenden 64980 After 6 o clock

SPECTRUM GAMES for sale – original Hulk Danger Mouse Arcadia, Lunar Jetman Bugaboo Manic Miner Terydactyl Jet Set Willy Beach head Ant Attack £3/4 each Tel. 01-505 3245

48K Spectrum + games, books mags £80 for quick sale. Tel 0865 242701

SPECTRUM 48K Over £500 software Kempston interface and Quickshot joystick still under guarantee Excellent condition Bargain £150 Tel 4551043 after 3 30 pm

ORIGINAL Spectrum software Reverse Blue Thunder Androids, Galaxy Attack £3 each Hobbit only £8! Caterpillar Gobble a Ghost, Schizoids Planet of Death Abc Alac £2.50 each Ride Range £1 Bristol 777593

SPECTRUM software for sale. 20 original tapes also 5 books plus VTX5000 modem Will sell the lot for £85 00 Phone 0483 853920

SOME Spectrum s/w eg Danger Mouse Daley Thompson £3 all original Tel 061 450 6648

SPECTRUM Softare Alchemist Scuba Dive Lunar Jetman Fred, Chuckie Egg M Coder II The Pyramid plus many more All originals Only £3 each. Phone (0455) 611777

SPECTRUM 48K + software + tape deck + mags whole system over £600 + Offers to Andy 0514 307808 or will consider swap for Atari 800XL plus drives (software sale appreciated) Ugh!

48K Spectrum £180 s/w Tape recorder Int 2 dust cover + Sprint 4times faster tape loading All for £260 Worth £450 Must go Phone Andy (0933) 317858

48K Spectrum original software Kaleidoscope Death Alley Meany Monster Alien Armada Night Raider £3.50 each £15 the set 4 St James Court, Wricklemarsh Road Blackheath London SE3 0NE Phone 01 856 8773

SPECTRUM 48K brand new unwanted present with some software bargain for Christmas £100 Tel 01-636 9636 day time

48K Spectrum with new dk'tronics pro key board printer + interface Quickshot II joystick and 23 original s w games tape cost £405 will accept £185 ono Tel 0924 258430 (Wakefield) Yorks

SPECTRUM 48K as new 30 keel manual etc. offers Sinclair ZX Interface I + Microdrive + cartridge, offers Casio TV 100 pocket computer offers Tel Hornchurch 42642 after 4pm

SPECTRUM s/w for sale incl Jasper Turmoil + Zombie Tel Sam 01-368 3784 after 4 30 pm

48K Spectrum Fuller FDB keyboard sound amplifier 3 joystick interfaces, Currah Speech Plus 182 games simulation etc Decathlon Combat Lynx all originals, £350 ono Room 7 18 Victoria Park Dover Kent

Ataris for sale

ATARI VCS with 35 cartridges 3 joysticks, paddles video touch pad and cartridge box Worth over £550 ideal xmas present at £200 ono (includes Phoenix Enduro Smurf Defender) Tel 091-2857003 (Tyneside)

ATARI 800 + cass. + s/w + books + maps + basic + manual excellent cond £180 or swap for CBM64 + C2N Buyer must collect write with phone number S.Sanger 80 Alston Ave Wickford Essex SS11 7JS

ATARI 600 48K unwanted prize very good condition £100 ono Tel Threadwood 354 after 6pm

ATARI 800 48K with 410 cassette many top selling games including Astrochase 8 Pinball Basic Manuals Joysticks boxed as new £175 ono Tel 0225 810132 or 0249 655854 after 6pm

ATARI 600XL cassette unit, joystick tape s/w original 7 cartridges books and magazines Sell for £210 ono Swap for CBM64 + tape une Tel J Gatehouse 0622-4745

ATARI 800XL 16K tape recorder 4 original cassettes 3 cartridges excel graphics boxed vgc £85 ono Tel West Malling 848488 ask for John 5pm onwards

ATARI 400/800 software all original and brand new mostly cartridges £5 each or 10 for £45 or 20 for £80 ono Tel (021) 749 4803, ask for Pete.

ATARI 600 800 joysticks basic cassette program basic cartridge Pacman Asteroids and Star Raiders cartridges all good condition only £80 3 Lord St Great Harwood BB6 7DX, tel. 0254 885113

ATARI VCS with joysticks paddles leads etc 7 games including defender and pack man good cond. £70 Tel Guiseley (0943) 77001 eves.

CBM64 s/w to sell many new titles, original for sale only Tel 0706 37378

CBM64 C2N manual over £80 of software all original £80, worth of new books cost £420 sell for £320 only reply to every letter 57 Sycamore Avenue Mirnslawge Huddersfield HD3 4SG

EDUCATIONAL game for CBM64 Choochoo for ages 5 11 can be made to your own special requirements, superb graphics a bargain at only £4 Tel 021 742 6334

Acorns for sale

BBC B Computer with Ferguson TX 14 television Tandy CGP 115 printer and interface games books and leads Approximately £770 ovno Tel Coventry (0203) 614924 evenings.

BBC Computer software for sale including Elite Dune rider and Gateway to Karos Together with 30 quality games £186 including delivery All originals. Phone Sevenoaks 454717 Cost new £300

FOR SALE BBC B DFS disk drive, 100K View 2 1 ideal for wordprocessing £500 Tel Cardiff (0222) 485684

ACORN Electron with all inc leads manuals £35 Computer tape recorder + £50 of s/w 8 months old under guarantee £150 Tel Sheffield (0742) 551236

BBC B Cumana double disk drive and lots of cassette software Brand new unwanted presents £600 the lot Call Wendie Pearson 01 251 6222 (day) or 385 5817 (eves)

ELECTRON for sale £185 immaculate hardly used + software magazines books and leads Worth over £250 Tel 01 958 5707

BBC Software for sale All originals Hobbit £7 Vision's Snooker Blagger Killer Gorilla 3D Bomb Alley Program Power Chess £4 each Tel Darlington (0325) 55410 after 6pm

ELECTRON s/w for sale Twin Kingdom Valley £4 50 Cylon Attack £4 00 Elite Unwanted gift £10 Tel 061 368 6905

COLOUR monitor for sale £115 + leads for BBC Leask 560102 after 6pm

£200 of BBC s/w all original excellent condition From £3.00 each Tel 0222 867086

BBC 32K software Galactic Commander £3 00 737 Flight Simulation (Salamander) £6 00 Twin Kingdom Valley £5 00 Blagger £5 00 Adventure Quest (L9) £5 00 Eldorado Gold £1 00 Originals only Tel 0258 840357 w/e

BBC SOFTWARE half price Starship Command £4 95 Overdrive £3.86 Pole Position £8 45 3D Grand Prix £4 00 Gorph £3 00 Monsters £4.65 Killer Gorilla £4 00 Vortek £3.90. Tel Chelmsford 0245 50432

BBC B double-sided disk drive + double density interface + cleaning kit Box of 8 disks + £100 of s/w inc TaPe + disks All origiNAl under guarantee Worth £770 Sell £570 ono Tel John w/e after 6pm (061) 8814496

AQUARIUS Computer + expansion unit + joystick + 16K + printer + games + manuals All boxed with leads £110 0935 813829 after 6pm

BBC SYSTEM Hobbit microdrive printer Acorn speech Wordwise Aid Toolkit Graphics Graphic dmp Delta handset sideways ROM board + mem Offers around £800 Write Mr4 19 Wainfleet Road, Skegness Lincs

Tandys for Sale

VIDEO GENIE System EG3003E Built in cassette unit £100 of s/w + books, manuals All perfect condition £150 Tel 01-674 2091 Tony Andersen.

TANDY CGP 115 4 colour printer plotter with spare pens dust cover manual and leads to connect to Dragon £125 vgc inc postage. Tel Whitesabbey 83368 1am

TANDY TRS 80 16K L2 tape recorder software games programs manuals books As new £150 ono Holmes Chapel (0477) 32378

TANDY TRS-80 Mod I level2 + expansion interface + monitor + cassette recorder 48K memory upper & lower case numeric key pad manuals programs £150 0935 813829 after 5pm or swap for Acorn Electron

Dragons for sale

DRAGON 32 with MCP-40 colour plotter cassette player joystick light pen 19 original s/w including All Dream Assembler 3 books + all Dragon users Sell £175 Tel (061) 786 8341

DRAGON 32 disk drive Dragon DOS disks joysticks, cover £400 + of original software leads magazines books listings all boxed in agc Worth £900 + Sell £400 ono Ring teh evenings Southampton 695236

DRAGON 32 + Cassette recorder leads 3 joysticks + lightpen 1 cartridge books mags loads of software eg Donkey Kong Frogger Golf etc. agc £170 inc. Postage Tel White Abbey 63388

DRAGON 32K Computer plus PSV leads + manual + 2 joysticks and s/ware £90 ono. Tel. Harlow 32100

DRAGON Software — top titles from Microdeal Dragon Data A & F Salamander Also Gemini Spreadsheet and Textstar wordprocessor All titles original and half price Tel Ian on Bradford (0274) 583734

DRAGON 32 2 joysticks 20 games utilities 1 cartridge 4 books DU and Rainbow mags £140 ono Write to A.J Pimperton 122 Elmsdale Ave Little Heath Coventry

DRAGON 32 plus £100+ software (includes Telewriter and Database) for sale Owner upgraded to Dragon 64 and disc systems Price £100 ono [Could include books if required] Tel 01 960 0664

DRAGON printer 80 col thermal with cable etc ready to use Only £40 Tel Ware 58264 (Too heavy to post)

15 DRAGON games for sale titles

inclunal Buzzard Bait Ughl and Hunch bach Was once £100 Sell £50 Tel 01 710 1688

Commodores for Sale

CBM 64 s w for sale Summer Games Raid over Moscow High Noon Havoc Aztec Challenge and many more new releases Tel (0902) 734050 ask for Gaz after 4pm

CBM 64 1541 disk drive disk joystick, Cassette interface £300 or will swap for Amstrad CPC 464 Tel 0342 8 83574

SIMONS BASIC CBM64 130 ono Tel 0438 318780 (Stevenage)

NEARLY £800 of s/w for Vic-20 Plus 16K switchable memory Originals only Sell at £300 ono Tel Chms 0472 53619

VIC-20 16K Ram Pack £20 Tel 01-701 9485

FOR SALE Vic-20 + Cassette unit + 8K RAM + Introduction Basic 1 Books + £50 of software worth £230 Will sell for £150 Tel 0475 666567 Phone anytime

VIC 20 Cassettes for sale All originals Very cheap and in excellent condition Rabbit, Anirog Interceptor Imagine and many other software houses Tel 0600 54608 after 4pm Ask for Martin

VIC 50 Starter Pack plus switchable RamPac plus Super Expander 9 game cartridges 15 game cassettes assembly course other oddments Worth £400 Sell for £240 ono Swindon 642533 after 5pm

VIC 20 plus C2N cassette player 8K RAM Pack books s/ware joystick and chapitter cartridge £95 Tel 01-554 4065

VIC 20 + C2N cassette + 1 game (Meteor Blaster) Very good condition Sell for £70 Tel 241 0370 Ask for Al

EXCELLENT Condition Conmodore 64 + Cassette with over 50 games inc Beachhead International Soccer etc. Joysticks Speech + books worth over £800 Offers £350 ono Tel Andrew 814157

VIC 20 Complete Starter Pack + free s/w (originals only) books £80 Tel (6-9pm) 01 949 1334

VIC-20 16K switchable Ram Pack joystick cassette recorder 4 cartridges £100 of original s/w £110 Tel Nazeing 3207

16K SWITCHABLE Ram Pack for Vic 20 vgc Only £15 Tel 061-480 2445 after 5pm (Ask for Petr)

GOODIES car ees for Vic-20 and CBM 64 Great software from UK and USA. For large graded lists please send sae to John Keogh 30 Highwood Avenue North Finchley London N12 8QP

CBM 64 with cassette unit joystick + 1 game £190 Tel Kidderminster 0562 744680

VIC 20 + cassette unit (boxed) 3K Super Expander Joystick £100 of original s/w Ideal xmas present £190 Tel Thorn (0405) 813772

CBM Printer as new boxed £170 Tho r (0405) 813772.

VIC 20 16 Experts on 3K Super Expander C2N recorder Stack Light rifle 7 Cartridges games. 64 original cassette games Introduction of Basic I & II 12 programmable books £225 ono Tel Orpington (Kent) 29007

VIC 20 s/w for sale Panic, Arcadia Tornado Gridrunner Crazy Kong Metagalactic Llamas battle All originals and in excellent cond £20 the lot Clarkson 42 Morecambe Street Liverpool 8 L6 4AX

CBM 64 software for sale Genuine All Level 9 Twin Kingdom Hover Rover Heroes of Karn Classic Adventure The Boss etc Valhalla Beachead Pitfall grow Chronicles All games Half price Phone Worcester 352886

COMMODORE 64 for sale with peripherals (disk drive and MPS 801 printer 60cps) and software (word processing accounts games) and very useful documentation Will sell all or part Phone 01 654 0808

VIC 20 Starter Pack + Into Part 2 + 16K switchable RAM pack + 20 games worth £335 Sell for £150 Tel 01-587 7106

VIC 20 + cassette deck + 16K + Super Expander + joystick + 19inch b/w TV + programmers reference guide + manuals + magazines fully boxed. Worth £350 + £130 of software Accept £170 ono May split. Tel Maresfield 792511

VIC 20 Starter Pack over £130 worth of original software Quickshot joystick Mint two Introduction to Basic programming I & 2 manuals books worth over £300 Sell £120 Tel Coventry (0203) 360 950

VIC 20 C2N 16K switchable RAM pack, Intro to Basic I Quickshot 2 lots games and mags £130 Ask for Paul SOS 0702 540452

CBM 64 Cassette £90 of games Joystick £180 ono Tel 01 743 3619

DBN 64 for sale + 25 games (all original) + guide for playing Hobbit, APX £150 with manuals + leads Kapal 6-9pm Tel 01-455 3185

7 BLANK disks C64 + manual Offers Te 11 455 3185

For Sale

FOR SALE [illegible] speech for the zx Spectrum vgc. £20 ovno with free game P Gower 4 Clyfford Crescent, Newport, Gwent

ORIC 1 software for sale Wimpley MARC Souls, zorfons 3D battle £2 50 each Hobbit £3.50 Lords of Time £3.50 All for £18 00 Originals. Southampton (0703) 847164

SHARP MZ80A As new 48k integral cassette and monitor Games utilities and books £300 Any offer considered Tel Worthing (0903) 690370 after 6pm. Weekdays any time weekends

IDEAL Christmas Gift. Oric 1 48 tape recorder programmable joystick interface Quickshot, 5 Oric owner mags 6 books and over 25 games Optional extra B/W TV Costs over £320 Sell only £115 (TV) £25 Tel 0243 787282

2 ZX Microdrives £70 8 microdrive cartridges £20 Unwanted gifts brand new Amstrad MP1 £22. As new Tel 0636 022 744 (Bla ilyn)

ORIC 1 48K, tape recorder 2 manuals mags all leads £73 worth software under guarantee Excellent condition As new £85 ono Tel Leicester 7x6602 after 6 00am Ask for Paul

DMP 100 printer 80 columns h-res graphics Centronics RS232 interface (Ideal for Interface 1) including RS232 cord + screen dump software + 100 sheets paper Mint condition New £300 sell £125 ono Tel 0272 684615

TRS-80 model 100 24K Ram including program recorder 2 months old £450 Also video games system with unique built in screen including 2 games £35 Tel Brighton 695351

SHARP MZ 700 64K Colour built in printer built-in tape recorder + manual + s/w £250 Tel 393 501 (Notts)

EPSON HX20 + micro cassettes £300 ono Tel Erdington 384 (Worcs)

48K ORIC good condition £70 ono Tel Jason Miller Newmarket 750439

CASIOTONE MT70 electronic keyboard as new Complete with bar-code reader and original packing Offers around £120 Tel 01-468 3935 after 6pm

MICROS Peripherals CGP 115 4 colour graphics printer plotter excellent condition still boxed only £550 Tel 0344 888178 eves

Wanted

WANTED SPECTRUM version 4C Hour Basic Tape and or book Also either Learn Basic of machine code tapes 75 Beaconsfield Rd London N15 4SH Phone 01-800 6767 after 7pm.

SWAP my Vic 20 20K plus lots fa software and loads of magazines for your CBM64 Software would be much appreciated but unnecessary Ring Ralgate 22136 after 5 00pm for details

WANTED ADVENTURE programs, assemblers and disassemblers for TRS 80 MIL II good prices paid — contact Martin Ward High Larches Shire Lane Farnborough Kent BR6 7HH

WANTED White Lightning Swap for Hurg Bournemouth 737692 after 5pm

WANTED MICRODRIVES and interface 1 Will pay half recommended price Would pay more for 2X Expansion system Tel 01 736 9332

SWAP ORIC 1 48K for byte drive 500 or sell for £80 ono with original packaging (Owner has Atmos) tel (048 67) Brookwood 3702 Surrey evenings/weekends

WANTED any version QL, swap for Oric Atmos Dragon 32 Acorn Atom accessories for all joysticks books etc. Good condition Value £500! Also recorder Tel Crynant, 750952 and ask for Andrew

WANTED SPECTRUM 48K. Working order up to £70 paid also peripherals considered Phone (051-424 5558 Daytime

SWAP C64 — CM2 Cassette all boxed 4 year guarantee plus £100 of software for BBC + cassette Will pay extra for disc Tel Swindon 36870

WANTED BBC B in exchange for 1 48K Spectrum + Kayde Electronics Full size keyboard but + printer BBC type sound chip thick stick joystick, £80 of s/w Tel 682 653 (Poet)

PENPAL or tape pal wanted with 16K or 48K Spectrum age not important but prefer adult male or female to exchange ideas progs etc I am beginner and require help 041 762 0105

SWAP SHARP PC1500 with printer cassette interface software and tape recorder for music centre or stack unit Tel 0493 781958

YOUR LERM (MD1) microdrive transfer tape (original with manual & examples) swap for one of my unused microdrive cartridges Please ring Paul on Suckley (08864) 588 (Worcestershire)

WANTED First copy of Crash Mags one name your price and ring 01 348 3924 Ask for Graham

WANTED ZX-48K Spectrum Plus real keyboard £100 cash plus P I P or £75 and £25 separate No software Write to address below V Efstratiou, 46 Evangelistria St 17671 Kallithea, Athens Greece

WANTED ROM cartridges for Sinclair Spectrum (chess Jet-Pac etc) write first with price please Mr J F C Sellick Garden Flat 10 Cotham Gardens Redland Bristol BS6 6HD

EXCHANGE Spectrum 48K Plus microdrive plus interface 1 plus s/w and manuals for Tandy TRS 80 model 1 or 3 48K plus VDU Write C R Holarsall Handling Flight RAF Linton-on-Ouse Yorks Y06 2AJ

WANTED ZX printer to swap for Ant Attack Morris Meets the Bikers 3D Tens Micro Mouse Sinclair Games 4 originals Tel (0287) 32561 (after 4pm on weekdays)

WANTED any Spectrum or CMB in working condition for £20 for unemployed [illegible] spare printer Please quote price unwanted games as well Sony 41 Lowestoft Rd Gorleston Norfolk NR31 6LZ

ADVENTURE HELPLINE

Hobbit on Commodore 64. How do I get past the magic door in the Elvenkings halls? If there is a key where is it? Robert Morris c/o EOF85896 F/S Morris, Sgts Mess, RAF Gatow BFPO 45

Twin Kingdom Valley on Commodore 64. I can't get the master key off the dragon because he burns me to death. Simon Hegarty 15 Highfields Hoyland swaine, Sheffield.

The Quest on Commodore 64. How to get out through the window in the observatory? HB Wishart 'The Pear Tree' Sunderland Road Felling Tyne and Wear NE8 3LR.

Dallas Quest on Commodore 64 How do I go down the ladder in the trading post? P A Taylor 187 Uplands Road, West Moors Wimborne, Dorset.

Labyrinth on TRS80 I cannot get past the bear man or gnome! Chris Enright 384 Poynters Road, Luton, Beds LU4 0TW

Urban Upstart on Spectrum. How do you fly the plane? I need help desperately Mark Allan, 20 Holmergreen Road, Hazlemere, High Wycombe Bucks HP2 7BL (Tel 716884)

Classic Adventure on Spectrum. I can only score 140 but I can't find any more locations John Bladon 16 Benson Avenue, Goldthorn Park, Wolverhampton W Midlands

Gateway to the Skyes on BBC In part 1 how do I get the package and how do I get the bones for the dog? Eric Tandru, 51 Firwood Drive, Camberley Surrey GU15 3QD

Fantasia Diamond on Spectrum I can't manage to cross the river What does 'wait for it' mean? Darren Parkinson 48 Drydon Avenue, Bryn nr Wigan Lancs.

Castle of Riddles on BBC I have found 11 treasures but I cannot take the ring without being killed How do I get the ring? Jan Wiffill, 18 Auckland Road, Ford, Plymouth, Devon PL2 3RX.

Pyramid of Doom on BBC Where is the tiny door? How do you get inside the pyramid? David Yick, 5 Ryburn Buildings Sowerby Bridge nr Halifax, West Yorks HX6 3AH.

Magic Mountain on Spectrum. I can't get through the maze Could someone give me directions please Katy Proctor, 23 Linnell Road, Rugby Warwickshire

Hobbit on Spectrum. What do I do after opening the window in the goblin's dungeon? D A Hollis 3 Aldbourne Road, Burnham, Bucks SL1 7NJ

The Count on Vic20 How do I get into the vents? What do I do when I find the coffin? How do I find the crypt? Andrew Kingman, 6 Fallowfield Leighton Buzzard, Beds LU7 8PW



Top 10

Vic 20

1	(10)	Perils of Willy	(Software Projects)
2	(3)	Duck Shoot	(Mastertronic)
3	( )	Punchy	(Mr Micro)
4	(—)	3D Maze	(Mastertronic)
5	(5)	Sub Commander	(Thorn EMI)
6	(8)	Snooker	(Visions)
7	(2)	Computer War	(Thorn EMI)
8	(4)	Max	(Atari)
9	(9)	Space Scramble	(Mastertronic)
10	(—)	Flight 015	(Craig Communications)

(Figures supplied by Boots/Websters)

Commodore 64

1	(—)	Ghostbusters	(Activision)
2		Raid over Moscow	(US Gold)
3		Chiller	(Mastertronic)
4		Psi Warrior	(Beyond)
5		D Thompsons Decathlon	(Ocean)
6		International Soccer	(CBM)
7		Falcon Patrol II	(Virgin)
8		Zaxxon	(Centresoft)
9		Jet Set Willy	(Software Projects)
10		BMX Racers	(Mastertronic)
		Beach Head	(Centresoft)

(Two titles tie for 10th supplied)
(Figures supplied by Boots/Websters)

Spectrum

1	(—)	Knight Lore	(Ultimate)
2	(—)	Pole Position	(Atari)
3	(1)	Daley Thompsons Decathlon	(Ocean)
4	(3)	Beach Head	(Centresoft)
5	(9)	Tornado Low Level	(Vortex)
6	(—)	Backpackers Guide to the Universe	(Fantasy)
7	(—)	[illegible]	[illegible]
8	(—)	Strange Loop	(Virgin)
9	(—)	Full Throttle	(Micromega)
10	( )	Jet Set Willy	(Software Projects)

(Figures supplied by Boots/Websters)

Dragon 32

1	(1)	Hunchback	(Ocean)
2	(6)	Hungry Horace	(Melbourne House)
3	(8)	Dragon Chess	(Oasis Software)
4	(2)	Mystery of Java Star	(Shards)
5	(4)	Chuckie Egg	(A&F)
6	(9)	Mr Dig	(Microdeal)
7	(5)	Cuthbert in Space	(Microdeal)
8	(7)	Encrypted	(Beyond)
9	(10)	Bug Diver	(Mastertronic)
10	(—)	Sprite Magic	(Knight Software)

(Figures supplied by Boots/Websters)

BBC

1	Scrabble	(Leisure Genius)
2	Elite	(Acorn)
3	Football Manager	(Addictive)
4	Swoop	(Micro Power)
5	Mini Office	(Database)
6	Mr EE	(Micro Power)
7	Pearl Harbour	(M/Game Simulations)
8	Elite (Disc)	(Hewson)
9	Challenger	(Mastertronic)
10	Return to Eden	(Level 9)

(Figures supplied by Boots/Websters)

Atari

1	(9)	Encounter	(Hi-Tech)
2	(1)	Attack of Mutant Camels	(Llamasoft)
3	(3)	Zaxxon	(Centresoft)
4	(6)	Gridrunner	(Llamasoft)
5	(10)	Sports	(Centresoft)
6	(8)	Caverns of Mars	(Atari)
7	(3)	Computer War	(Atari)
8	(5)	Tank Commander	(Thorn EMI)
9	(7)	Leggit	(Imagine)
10	(4)	Sub Commander	(Thorn EMI)

(Figures supplied by Boots/Websters)

Amstrad

1	(1)	Harrier Attack	(Durell)
2	(—)	Ghouls	(Micropower)
3	(—)	Word Processor	(Amstrad)
4	(6)	Star Commando	(Tecnosoft)
5	( )	Forest at World's End	(Interceptor)
6	(3)	Code Name Mat	(Micromega)
7	( )	Return to Eden	(Level 9)
8	(4)	Roland in the Caves	(Amsoft)
9	(—)	Monster Chase	(Romik)
10	(2)	Chess	(Amsoft)

(Figures supplied by Boots/Websters)

Readers' Chart No 1

1	Daley Thomson's Decathlon *(Spectrum/C64)*	**Ocean**
2	Danger Mouse in Double Trouble *(Spectrum/C64*	**Creative Parks**
3	Elite *(BBC/Electron)*	**Acornsoft**
4	Underwurlde *(Spectrum)*	**Ultimate**
5	Pyjamarama *(Spectrum/C64/Amstrad)*	**Micro-Gen**
6	Beachead *(C64)*	**US Gold**
7	Tir Na Nog *(Spectrum)*	**Gargoyle**
8	Deus ex Machina *(Spectrum)*	**Automata**
9	Eureka *(Spectrum/C64)*	**Domark**
10	Lords of Midnight *(Spectrum/C64)*	**Beyond**

Week 1: No winner — £50 added to Week 3 chart fund

Now voting on Week 3

Each week Popular is compiling its own special software top ten chart — compiled by YOU

All you have to do to vote is to fill in the form below with ten names of your current three favourite software titles (or copy the form onto another sheet if you don't want to damage your magazine) and send it off as soon as possible to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

We will send £50 each week to the person who correctly predicts that week's top three! If there is no winner then that week's prize is automatically added to the chart on which voting is currently taking place and so on until someone gets it right! (If there is more than one winner that week's prize — whatever the 'pot' stands at — will be split equally between all the correct entries.)

Voting for Week 3 closes at 2pm on Wednesday December 5. Entries received after that time will not be eligible for inclusion in that week's voting.

Name..

Address..

....

....

My top 3: Voting Week 3

1..

2..

3..

Diary

Event	Dates	Venue	Admission	Organisers
Electron and BBC Micro User Show	Dec 6-8 10.30am-8.00pm Dec 9 10.00am-4.00pm	New Horticultural Halls London SW1	£3.00 adults £2.00 children	Database Publications 061 456 8383
Which Computer? Show (over 18s only)	Jan 15-17 (1985) 10.00am-8.00pm Jan 18 10.00am-4.00pm	NEC Birmingham	Free in advance from organisers	Clapp and Poliak 01-891 8181
Hi-Technology and Computers in Education Exhibition	Trade: Jan 24 10.00am-1.00pm Educationalists: Jan 24 1.00pm-8.00pm Jan 25 11.00am-8.00pm Public: Jan 26 11.00am-6.00pm	Barbican London EC2	Free in advance from organisers	Computer Marketplace 01 930 1612

MAGIC STONE

Along with some cassette versions of previously disc based games like *Alice in Videoland*, Audiogenic have released *Magic Stone*, an adventure with, it says, 'graphics, sprites, music and sound'.

The aim of the adventure is to find a magic stone — secret key to alchemy — and a book of experimental notes by Von Schwarzhersen which tells you what to do with it. Aiding you is a mystic amulet which turns different colours when magic is around.

The graphics are fairly simple and occupy only about a sixth of the screen, nevertheless the idea of graphics that change according to your choices is definitely one of the directions we are moving in. Of the quality of the adventure as an adventure I can say little except that I got stuck after about seven moves and it only understands a fairly simple vocabulary.

Still, I suspect it could get pretty addictive and it is a little different from the norm.

Program *Magic Stone*
Price *£8.95*
Micro *Commodore 64*
Supplier *Audiogenic, 30 Suttons Industrial Park, London Park, Reading Berkshire RG6 1AZ*

DISASTER

Havoc on the Commodore was one of the best programs released recently for the machine. Now the program has been issued for the Spectrum and it is a massively inferior game.

The smooth 'diagonal' scroll of the CBM version has become a jumpy, jerking mess and in only two colours.

The game is also easier to play than the Commodore version which would be an advantage perhaps had one any inclination to play it. But the whole thing is such a disaster I'm surprised Dynavision bothered to release it — especially given the reputation it had built with the original. One last point, the packaging uses photos from the CBM version — OK this fact is pointed out, but it's still highly misleading to anyone taking a quick glance. Avoid completely.

Program *Havoc*
Price *£7.95*
Micro *Spectrum*
Supplier *Dynavision Producing Studio PO Box 96 Luton LU3 2JP*

STREETWISE

What could be more streetwise, outdoorsy, energetic and physical than breakdancing? — the very antithesis of all things computeresque you might think but no — now you can breakdance on the computer. This does not mean dancing about on top of it and smashing it to bits. *Breakdance* is a computer program for the Commodore 64.

Actually for the most part what you get are various games based around dancing, although one option is to create your own dance. Inevitably much of the program involves the Commodore 64 making scratch record impersonations, quite funky really and only spoilt by my having heard the *Ghostbusters* music on the same machine which easily outclasses it.

The little figures boogie quite neatly and games include a *Simon* variant in which you have to match the movements of a dance, another has you trying to perform backspin and suicide moves. I'd have thought that breakdancers wouldn't want to play a computer game and vice versa.

Program *Breakdance*
Price *£18.95*
Micro *Commodore 64*
Supplier *CBS Ashbrook House 3-5 Rathbone Place London W1*

ANCIENT ART

Ghoulies is a Quilled (best — I didn't actually find a reference though) adventure with many excellent touches not least being the way the text is enlivened with small illustrations, large capitals etc. like some ancient manuscript.

Ghoulies is actually a pretty gloomy and gothic adventure — one of the first things you'll discover is a corpse swinging on a gibbet. The plot concerns ancient arts, alchemy, secret documents and dead sinners.

What I like about the program is that though it has all the usual adventure touches of magic, clues, secrets, and ancient mysteries, its atmosphere is quite different from the norm. The gothic touches and horrible scenes give the adventure a dark hue like something by Bosch. X rated horror for hard core adventurers. A little gem.

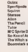
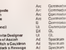
Program *Ghoulies*
Price *£6.00*
Micro *Spectrum*
Supplier *IMS Software, 143-145 Uxbridge Road, London W13 9AV*



This Week

Program	Type	Micro	Price	Supplier
Frogger 2	Arc	Atari	£9.95	Silica
Gyruss	Arc	Atari	£9.95	Silica
Star Wars	Arc	Atari	£9.95	Silica
Marine Wars	S	Atari	£9.95	Silica
Pooyan	S	Atari	£9.95	Silica
Strategy X	S	Atari	£9.95	Silica
Pole Position	Arc	BBC	£9.99	Atari
Robotron	Arc	BBC	£9.99	Atari
Hektik	Arc	Commodore 64	£1.99	Mastertronic
Jungle Story	Arc	Commodore 64	£1.99	Mastertronic
Mutant Monty	Arc	Commodore 64	£6.90	Arti
Quinx	Arc	Commodore 64	£6.95	Supersoft
Spectipede	Arc	Commodore 64	£1.99	Mastertronic
Squirm	Arc	Commodore 64	£1.99	Mastertronic
Starace	Arc	Commodore 64	£1.99	Mastertronic
Alien	S	Commodore 64	£9.99	ASP
The Pencil	Ut	Commodore 64	£11.99	Activision
Tutor	Ed	QL	£20	Snowsoft
M/C Sprite Designer	Ut	QL	£15	Snowsoft
Se-Kaa of Assiah	Ad	Spectrum	£2.95	Mastertronic
The Witch's Cauldron	Ad	Spectrum	£6.95	Mikro-Gen
Doomdark's Revenge	Ad	Spectrum	£9.95	Beyond





New Releases

STOCK LEVEL

There are several big problems with using your Spectrum for serious business purposes but one way or another all can be overcome Problams like keyboard and slowness of tape can be surpassed by buying an add-on and micro drives Centronics interfaces can be purchased for print outs The problem is there are few business programs that support micro drives (though the number are growing) let alone drive the various different Centronics interfaces

+80 *Stock Manager* not only drives nearly any interface you can think of, it outputs in 80 columns — just like 'real programs and supports microdrives

About Stock Manager programs in general there isn't much to asy — you can keep a record of all products stocked and view increases and decreases, minimum stock levels, produce invoices with appropriate Vat codes etc A small, but well written manual explains the basic functions and how to customise the program for your own particular interface, etc The results are printed out in 80 columns and look most impressive A useful program.

Program *+80 Stock Manager*
Price *£19 95*
Micro *Spectrum*
Supplier *Oxford Computer Publishing Brintrad 4a High Street Chalfont St Peter Buckinghamshire SL9 9QB*

SECRET RUNE

Sometime last year, around a month or so before *Valhalla* was finally issued Dorcas issued a program called *Oracles Cave* which featured an animated man who walked around, climbed ropes, fought baddies and hunted for treasures, in some ways the first animated graphics adventure.

Dorcas has now released a sequel to *Oracles Cave* entitled *The Runes of Zendos* which features the same general layout and a similar although smaller, character

The plot is complex and has been deliberately designed to function on different levels — on one it is a bash it out dungeons and dragons variant, on another it has a text adventure in which amongst other things you try to discover the meaning of various secret runes

Here's the plot. The year has been trapped — the spirit of each month is hidden in 12 Runic Hour Glasses which are scattered deep within a magical castle. You must find each glass and attempt to decipher the runes around it.

Top half on the screen shows the action — the little man who walks runs fights and climbs. The bottom is for you to input your sentence and for other information. There are a lot of options within the game including saving to microdrive. The 12 glasses from 12 connected,

Pick of the week

GOODIES AND BADDIES

Grown men weep for joy, children wave flags, white doves and coloured baloons are flung into the air *Doomdark's Revenge* has arrived. To describe Doomdark as long awaited is actually to make a mistake, not about enthusiasm but rather about time All things considered, this is a sequel that has followed reasonably closely the original triumph of *Lords of Midnight*. At least when you contrast it with the year or more between say *Jet Set Willy* and *Manic Miner* or *Great Space Race* and *Valhalla*.

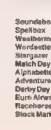
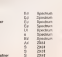
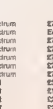
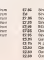
The basic look of Doomdark is the same as *Lords of Midnight*, but in many ways there is a different 'feel' to the game which makes playing the game a new and different experience. Apart from anything else, Doomdark is a more sophisticated and more difficult game

A number of extra commands and features have been added to the game *Check Place* gives information about the current location, *Check Battle* tells you how a battle went, *Check Army* tells you how many men you command. A new feature is mist which moves across the landscape and makes the going difficult — location pictures actually change over time as the mist moves Mike Singleton has also produced the effect of three colours out of two by using thin lines alternating the two main colours — this cunning effect can, for example, produce a kind of orange from yellow and red.

Doomdark is set in the icy waters to the north of the land of midnight. Morkin, affable hero, has been captured by the evil Shareth the heartstealer — a sort of cosmic Joan Collins. Morkin's true love, Tarithel the Fey, no wimp, wanders north in

This Week



Galaxian	Arc	Spectrum	£7 95	Atari
Ms Pac Man	Arc	Spectrum	£7 95	Atari
Pole Position	Arc	Spectrum	£7 95	Atari
Bodyswop	Ed	Spectrum	£7 95	Sinclair
Disease Dodgers	Ed	Spectrum	£7 95	Sinclair
Estimator Racer	Ed	Spectrum	£4 95	Sinclair
MacMan - Caber Eater	Ed	Spectrum	£7 95	Sinclair
MacMan Gt Escape	Ed	Spectrum	£7 95	Sinclair
MacMan s Magic Mirror	Ed	Spectrum	£7.95	Sinclair
Number Painter	Ed	Spectrum	£4 95	Sinclair
Oil Strike	Ed	Spectrum	£7 95	Sinclair
Planet Patrol	Ed	Spectrum	£7 95	Sinclair
Soundabout	Ed	Spectrum	£7.95	Sinclair
Spellbox	Ed	Spectrum	Ed	Sinclair
Weathermaster	Ed	Spectrum	£7.95	Sinclair
Wordsetter	Ed	Spectrum	£7.95	Sinclair
Stargazer	Ut	Spectrum	£7 95	Eclipse
Match Day	s	Spectrum	£7.95	Ocean
Alphabetter	Ed	Spectrum	£7 95	Sinclair
Adventure	Ad	ZX81	£3.95	Gavin Barker
Derby Day	S	ZX81	£1 95	R J Ratcliffe
Eurn Airways	S	ZX81	£2.80	Gavin Barker
Racehorse Trainer	S	ZX81	£2.80	Gavin Barker
Stock Market	S	ZX81	£2.80	Gavin Barker

search of him on a solitary journey through the mountains Luxor the Moonprince and Rothron the Wise (a Gandalf clone) supported by a mere 1 000 riders go through the ice gates in a direct assault

From the computer keyboard, you control the movements of all three characters, Luxor, Rothron and Tarithel, as well as anybody else they've been able to recruit There are thousands of locations, secret treasures and passage ways and countless goodies and baddies to be met

Unlike *Midnight* where there are adventure and strategy quests, here there is only the one way of playing the game — all characters have to move if you are to win and in its totality the game mixes adventure and strategy in about even portions.

The two or three days I've had it is nowhere near enough for deep analysis of the game — that'll follow in the following months — but with its added complexity and detail I think it could prove to be even more gripping than Midnight. Don't buy this one at Christmas if you are going to be expected to chat to your relatives

Program *Doomdark's Revenge*
Price *£9.95*
Micro *Spectrum*
Supplier *Beyond, Lector Court, 151 Farringdon Road, London EC1R 3AD*

but separately playable adventures, and you can switch to other adventures at any time during any game

Graphically it's fair, but not to be compared with the likes of *Tir Na Nog*, nevertheless it's tremendously playable and should take ages to solve completely.

Program *The Runes of Zendos*
Price *£7.95*
Micro *Spectrum*
Supplier *Dorcas 3 The Oasis Glenfield Leicester*

BREAK-IN

Blagger, one of the best-selling programs on the Commodore 64, has now been translated for the Amstrad. For those who do not know the game it was perhaps the first *Manic Miner* rip off although done sufficiently well to become quite a classic in its own right.

Roger the Dodger, a housebreaker, has to find his way through a house collecting golden keys. Unevitably, collecting the keys is no easy matter; some require seemingly impossible leaps others seem guarded by unavoidable nasties of various sorts

The blurb for the game describes it as having stereo sound effects I suppose this means the wheeeeeeeeees you get when your little man makes an ill calculated leap Amstrad owners aren't as surfeited with *Miner* style games as owners of other machines and this is one of the best The quality of the conversion from the Commodore 64 is fair but I suspect we have yet to see what the Amstrad is capable of when pushed to the kind of limits as recent Spectrum games.

Program *Amstrad*
Price *£7.95*
Micro *Amstrad*
Supplier *Alligata, 1 Orange Street Sheffield S1 4DW*

SUBLIME

Cliffhanger is one of the very few games New Generation have produced for the Commodore 64 It's a game you'll either find irritating or sublime, depending on how you feel about roadrunner cartoons.

Personally, I love roadrunner cartoons The effortless way fate conspires to protect the bird from the efforts of the coyote's ever more devious and Machiavellian plots and the seeming obliviousness of the rather daft looking bird to all that takes place never fails to produce fits of rib-aching mirth

Cliffhanger replaces the coyote with a silly looking man and the roadrunner with a bandit There are various screens in all of which the simple objective is to drop a rock on or otherwise blow up the bandit.

In some screens there are seesaws where you drop a rock on one end and another rock is shot through the air, in others technology is introduced in the form of a giant cannon. In all screens the structure is the same You stand high on a rocky outcrop above a desert landscape, the bandit comes from the far distance to the front of the screen — you have to time your assault carefully

The success of the game lies in the small touches — if you accidentally walk off a cliff you plummet to earth out of sight with the authentic pewwwwwwwwweeeeeeeeeeeeeeesch sound featured in the cartoons.

You might find the simple plot insufficient to retain your interest Personally, I can watch it for hours Good fun for the kids at Christmas I should think

Program *Cliffhanger*
Price *£7.95*
Micro *Commodore 64*
Supplier *New Generation, The Brooklands, 16 Sunnybank, Lyncombe*

This Week

Addresses
ASP, No 1 Golden Square London W1R 3AB 01-437 0626 **Activision,** 15 Harley House Marylebone Road London NW1 01-486 7588 **Artic,** Main Street, Brandesburton, Driffield YO25 8RI, 0401 43553 **Atari,** Atari House Railway Terrace Slough Berkshire 0753 33344 **Beyond,** Lector Court, 153 Farringdon Road London EC1R 3AD 01-837 2899 **Eclipse,** 79 Ardrossen Gardens, Worcester Park Surrey KT4 7AX 01-330 3116 **Gavin Barker,** 12 Fleming Field, Shotton Colliery County Durham DH6 2JF 0783 261405 **Mastertronic,** Park Lorne 111 Park Road, London NW8 7JL 01-402 3316 **Mikro-Gen,** 44 The Broadway Bracknell 0344 427317 **Ocean,** 6 Central Street Manchester M2 5NS 061-832 6633 **R. J Ratcliffe,** 40 Merok Park Belfast BT6 9LT, **Silica,** 1-4 The Mews, Hatherley Road Sidcup Kent DA14 4DX 01 309 1111 **Sinclair,** Stanhope Road Camberley Surrey GU15 3PS 0276 686100 **Snowsoft,** 6 Bousfield Crescent, Newton Aycliffe Co Durham DL5 5HZ. **Supersoft,** Winchester House, Canning Road, Wealdstone, Harrow Middlesex HA3 7SJ 01 861 1166

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to This Week *Popular Computing Weekly* 12-13 Little Newport Street London WC2R 3LD

BARDIC LOGIC

When Macbeth, the Thane of Cawdor as he then was went to the Hecate Computer Bureau for the calculation of future projections for his business plan, he seems to have obtained good value as the whole

Although the event took place many centuries ago Shakespeare as always brings out the timeless quality and nature of human experience in his description of the incident.

Thus he tells us of the initial proposal for a demonstration to the client.

When shall we three meet again?'

And of a problem of decision-making and authority within the organisation, Hecate, who clearly occupies a senior management position complains of being left out of the presentation — How did you dare to trade and traffic with Macbeth and I was never called to bear my part or show the glory of our art?

However this problem is resolved and Hecate outlines special arrangements for some kind of bonus or commission for the operators I commend your pains, And everyone shall share i' the gains The presentation then takes place in 'a dark cave' – a venue obviously chosen for its constant ambient temperature of around 10°C, ruling out the necessity for expenditure on temperature control or air conditioning and as a suitable background for th 3D visual displays that the computer can produce

The scene then continues rather oddly Macbeth. 'How now ye secret, black and midnight hags! What is t you do?' All. A deed without a name.'

Nowadays, of course, it is customary to give computer systems and programs names, to distinguish one from another and to establish ownership and copyright, particularly with a view to licensing or franchising the material. However, the situation we are dealing with here where the program itself is not to be made available to the client; we do in fact hear the names of the modules of the system, such as Toad Newt and Dragon, when they are being loaded in binary form ('Double double toil and trouble) but these are never mentioned in Macbeth's presence.

This reasoning may may not be altogether correct however Macbeth's reference to secrecy may indicate that he has been made to sign some kind of confidentiality agreement, indicating possible access to the source software. There could hardly be any objection to his reporting the impressive not to say spectacular, nature of the output from the system to other potential clients. In particular the 3D graphics produced (holography?) indicate a technology to some extent in advance even of the present-day state of the art.

Macbeth is given the choice of having a report from the operators or interrogating the computer himself – 'Say, if thou dst rather hear it from our mouths, or from our masters?') He chooses the second alternative and thus reveals that the system is not only interactive but accepts input by telepathy Macbeth starts to ask a verbal question but is interrupted by one of the operators who tells him He knows thy thought Hear his speech, but say thou naught' This confirms again the high level of sophistication reached by ancient computer technology

In the final scene of the play Macbeth, King of Scotland as he then (predictably) was, complains that he has been misled by the output, he expresses a certain dissatisfaction with the service provided, deriving in particular it seems, from the comments about 'Birnam Wood' and 'man of woman born'

I begin he says 'to doubt the equivocation of the fiend that lies like truth and be these juggling fiends no more believed that keep the word of promise to our ear, and break it to our hope'

However, it is easy enough to blame the computer when things go wrong and if Macbeth chooses to interpret the output provided without reference to his own general knowledge about forestry and Caesarian section, it is probably because that is how he wants to interpret it.

Gwyn Mellish

Getting in training

Puzzle No 135

Eric has just spent a day sightseeing in London. His return rail fare cost him just one fifth of the money he had, and then he spent an extra 80 pence on newspapers to read on the train.

On arriving he bought lunch which cost him a quarter of what he then had before a quick tour of the sights costing just three pounds in fares.

Before leaving for home he spent a third of what remained on souvenirs, and a further seventy pence on sandwiches for the journey back

Whilst on the train he noticed that he had as many pounds as he originally had pence, and as many pence as he originally had pounds. Also no transaction involved half pennies.

How much did he set out with?

Solution to Puzzle No 13.

i) 7 * (7 * 3 * 5) = 735
ii) 8 * (1 * 2 * 8) = 128 or 5 * (1 * 7 * 5) = 175 or 4 * (3 * 8 * 4) = 384

The program assigns values to P,C and W and checks to see if the expression equalises. In the program given, the first of the two alphametics is being checked. To solve the second, amend Line 40 to: 40 T = W * (P * C * W).

```
10 FOR P = 1 TO 9 20 FOR C = 1 TO 9 30 FOR W
= 1 TO 9 40 LET T = P * (P * C * W) 50 IF T = P *
100 + C * 10 + W THEN PRINT P;C W 60 NEXT
W 70 NEXT C 80 NEXT P
```

NB Clearly, none of the values of P,C or W can equal zero

Winner of Puzzle No 128

The winner is D Tilley of Park Lane, Cottingham N Humberside, HU16 5RX, who receives £10 pounds.

Rules

If the puzzle can be sensibly solved using a computer then the winner have included a listing of the program used to find the correct answer The closing date for Puzzle 128 is December 14.

The Hackers


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LADY CLAIR HAS HAD A VISIT FROM A SINGING GORILLA, AND AUTOMATA UK LTD HAVE HAD A VISIT FROM THE VATMAN. THEY MUST RETURN TO PILAND TO SORT IT ALL OUT. CLAIR IS EATING SOME VERY FUNNY THINGS INDEED
OH, COME ON MORRIS! I THOUGHT YOU SAID YOU FIXED HIM, PIMAN!
LOOKS LIKE HE DID! FOR KEEPS!
SHUTTUP!
SHUTTUP
SHUT
SHUT UP!
IT'S NO GOOD! I CAN'T MAKE HIM GO!
TRIED PUTTING ALL-BRAN IN THE TANK?
VERY FUNNY! LOOK, WE'LL HAVE TO HAVE SOME TRANSPORT... FOR CLAIR YOU SEE
HSSRAA-UA-UH
CAN YOU MANAGE TO LIFT THAT HEAVY PHONE?
DON'T BE SARKY, YOU
OH, YAKZEE YAK? HI! LISTEN, WE NEED HELP
I WASN'T BEING SARCASTIC, CLAIR. YOU MUST BE VERY CAREFUL WITH A LITTLE TAX EXEMPTION ARRIVING
OH ALL RIGHT
SHUFFLE OF, YOU LOT. I DON'T SEE WHY YOU ALL HAVE TO TAG ALONG! IT'S MY FLIPPIN' TAX EXEMPTION
AYE WELL WE'LL SEE ABOUT THAT! FANCY A NICE HUNK O' COAL, LASS?
TA
AH THAT'LL BE YAKZEE
HARRO! I COME TO OFFER MY UNWORTHY BACK TO MAKE LADY CLAIR'S JOURNEY TO PIRAND MORE COMFORTABLE!
HA! ALSO BRING AUTOMATA'S GAME OF LUCK & SKILL "YAKZEE", TO PRAY ON JOURNEY!
GOOD! HELP US UP, CROUCHER - I'LL UNZIP THIS INTERDIMENSIONAL FLY-OVER!
ZZZ
URK
WHEEEE! SUCH EXPRESSIVE USE OF COLOUR FROM OLD EVANS TODAY!
AND SO THEY BEGIN THEIR JOURNEY ACROSS THE DESERT OF LOST IDEAS TO THE GATES OF PILAND
PILAND
OH AH COME FRAM TRINIDAD WID MAH SHITEREOGRAM ON MY ARM
It really gets worse every week! How can I punish my little girl for eating crayons and coal, when Lady Clair is depicted doing so on your page? Yours Veronica Angrallee
Dear Very, We know your "little girl" happens to be 34! Isn't it time she was hitched? — Automata
OW'S DEUS EX MACHINA DOIN, CROUCHER?
OH! GREAT, THANKS - HAD LOADS OF COVERAGE ON BBC'S SATURDAY SUPERSTORE AND THE CHIP SHOP ON RADIOS 1 AND 4
AND THE LBC BROADCAST AT ALLY PALLY THE OTHER WEEK - AND AN ARTICLE IN THE SUNDAY TIMES COLOUR SUPPLEMENT THIS WEEKEND!
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NO I'VE BEEN EATING A MAS BAR IT MUST BE CHOCOLATE!
HEE HEE THAT MAKES YOU A CHOCOLATEY CLAIR!
LOOK YOU GUYS! THE GATE OF PI
WOW! IT'S AWESOME! IT BLITZES MY MIND!
IT REFRESHES MY SENSE OF PURPOSE IN LIFE!
IT'S BEAUTIFUL! IT'S ETERNAL! IT'S
IT'S HALF SIX. WE'VE MISSED STAR TREK!
OH, POO!!